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ALTERNATIVE FUTURE SCENARIOS FOR THE NATIONAL AVIATION SYSTEM. --ETC(U)

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16. Abstract <p>This study updated and expanded the five socioeconomic scenarios prepared for the FAA in the prior study similarly titled. These scenarios were revised to reflect changes in conditions since the original study and to incorporate new material that may better aid the FAA in policy analysis. Scenario sections on economics were greatly augmented to give substantive descriptions of the economic and financial processes, and a new sector on international conditions was added to each scenario.</p> <p>This volume contains the five scenario narratives as well as the projections for each of 46 variables which were selected to give quantification to the scenarios. Though the revised scenarios do not discuss the future NAS, Federal expenditures for non-defense aeronautical research and development were projected and the results are given in a separate section following the scenario narratives. This volume also contains a discussion of the major events which were found to influence scenario development.</p>		
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ALTERNATIVE FUTURE SCENARIOS
FOR THE NATIONAL AVIATION SYSTEM

Vol. 2: Scenario Descriptions and Graphics

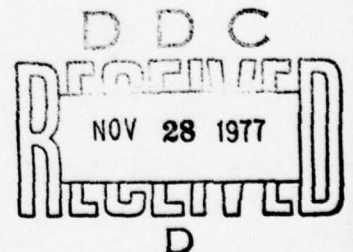
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PREFACE

This volume is one of four covering the work done in revising the five socioeconomic scenarios developed for the FAA in the study entitled, "Alternative Future Scenarios for the National Aviation System."* That study was directed at depicting various alternative future conditions that may exist in the United States and may impact on the National Aviation System (NAS).

While the basic positions differentiating the scenarios are the same here as in the previous study, insights into socioeconomic changes gained during the preceding 18 months have been incorporated into this study. New variables have been selected to better characterize the alternative "external worlds" which may influence the development of the NAS. New events important to shaping the nature of these worlds have been identified and incorporated into the scenarios. Furthermore, the scenario sections on economics have been greatly augmented to give substantive descriptions of the economic and financial processes in each scenario, and a new section dealing with international conditions has been added to each of the scenarios.

Each of the five scenarios describes alternative paths of socioeconomic evolution to the year 2000. The appropriate NAS that was described for each scenario in the previous study is not included in this revision. The five scenarios, however, can be used as the point of departure from which the appropriate future NAS may be developed for each scenario, as was done in the previous study.

*Alternative Future Scenarios for the National Aviation System, Report 174-72-01, prepared for the Systems Concepts Branch, Federal Aviation Administration (Glastonbury, CT: The Futures Group, August 1975).

These scenarios are not intended to be forecasts of future conditions. Rather they attempt to describe a range of plausible socioeconomic conditions important to the future of air transportation so that those involved with designing and assessing aviation system policies might have a framework for policy synthesis and evaluation. Hence the reader should view the conditions depicted in each scenario as if he or she were recalling a history of U.S. conditions from a vantage point sometime after the year 2000.

This volume contains the five scenario narratives as well as the projections for each of 46 variables which were selected to give quantification to the scenarios. Though the revised scenarios do not discuss the future NAS, Federal expenditures for non-defense aeronautical research and development were projected and the results are given in a separate section following the scenario narratives. This volume also contains a discussion of the major events which were found to influence scenario development.

The other volumes in this series are: Volume 1, Executive Summary; Volume 3, Methods and Data For Projecting the Variables; Volume 4, Supporting Documentation.

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Volume 1: Executive Summary

PREFACE

1. INTRODUCTION
2. SCENARIO SUMMARIES AND RESULTS

Volume 3: Methods and Data for Projecting the Variables

PREFACE

1. INTRODUCTION
2. THE PROCEDURE
3. DATA USED IN MAKING THE PROJECTIONS

Volume 4: Supporting Documentation

PREFACE

1. MASTER EVENT LIST AND EVENT PROBABILITIES
2. EVENT-VARIABLE MATRIX
3. REFERENCES FOR KEY AND NAS EVENTS
4. CROSS-IMPACT ANALYSIS
5. COMPARATIVE LIST OF VARIABLES PROJECTED IN THE REVISED AND ORIGINAL STUDY

INTRODUCTION

The five scenarios presented here are intended to describe the range of plausible "external worlds" that may determine the development of the future National Aviation System (NAS). These scenarios represent differing combinations of economic growth, population growth, and approaches to resource problems. They describe socioeconomic conditions in the United States and discuss this country's role in international affairs. While the scenarios are necessarily general in their discussion of alternative trends, quantified projections have been made for selected variables for each scenario. These variables characterize the socioeconomic and international conditions and provide a measure of the differences between the scenarios.

The scenarios may be used to suggest alternative evolutions of the NAS by developing the aviation system appropriate to the world described in each scenario. Developing an NAS for each scenario was not part of this present work. However, as in the previous study where such was done,* the scenario narratives provide a basis for understanding the social, political, economic, and international environments which may influence the NAS.

Certain projected variables in each scenario may be used to help quantify the NAS development. General economic variables such as gross national product, disposable personal income, and personal consumption expenditures are important factors determining the aviation demand. Demographic

*"Alternative Future Scenarios for the National Aviation System," Report 174-72-01, prepared for the Systems Concepts Branch, Federal Aviation Administration (Glastonbury, CT: The Futures Group, August 1975).

variables which impact upon aviation demand have been projected; these include population size, degree of urbanization, and a measure of the population distribution.

The condition of the capital market is crucial to future NAS evolution and such variables (aggregated for all industry) as AAA bond yield, the amount of long-term funds raised in credit markets, and the degree of funding which is internal have been projected. In evaluating the impact on the NAS of international conditions, variables relating to U.S. trade and investment have been projected for several world areas.

Not all of the variables projected, however, have a direct correlation with aviation demand. The variables were selected to give understanding to the scenario narratives and as such to help provide a means of arriving at judgments on issues relating to social and economic behavior. How the variables differ across the scenarios may be seen in Table 1, which contains a complete list of the variables and a comparison of the 1975 value with the 2000 value for each scenario.

A scenario is not a forecast per se but rather a plausible description of what might occur. This form of presentation is intended to describe events and trends as they could evolve. The likelihood of any particular scenario actually being realized may be quite low for several reasons. For example, a number of events and trends are discussed explicitly in each scenario. But since the likelihood of occurrence of the bulk of these is less than unity, their product (that is, the overall probability of the scenario) must be small.

Furthermore, scenarios are necessarily incomplete for two basic reasons. First, in the interest of brevity, scenarios usually focus only on those

TABLE 1
VARIABLES PROJECTED FOR EACH SCENARIO
SOCIOECONOMIC VARIABLES

Demographic	1975	Scenario A Limited Growth	Scenario B Expansive Growth	Scenario C Individual Affluence	Scenario D Hardships	Scenario R Resource Allocation
Total U.S. population including armed forces abroad (millions of persons)	213.5	245.0	287.0	245.0	287.0	262.4
U.S. population age 13-64 (millions of people)	124.9	157.1	165.2	157.1	165.2	160.8
Resident population in the combined South and West census regions as a percentage of total resident population of the United States (percent)	49.61	56.09	56.31	56.46	54.96	55.63
Population living in urban areas (using the 1970 definition of urban areas) as a percentage of the total resident population in the combined South and West census regions (percent)	(1970) 71.06	92.17	87.30	92.12	86.92	93.55
Population living in urban areas (using the 1970 definition of urban areas) as a percentage of the total resident population in the combined Northeast and North Central regions (percent)	(1970) 75.58	85.52	80.80	84.48	80.78	85.24
Median number of years of school completed by the civilian non-institutional popula- tion 25 years of age and over (number of years)	12.30	13.84	14.37	14.53	13.49	14.06

TABLE 1 (Cont.)
VARIABLES PROJECTED FOR EACH SCENARIO

SOCIOECONOMIC VARIABLES

General Economic	1975	Scenario A Limited Growth	Scenario B Expansive Growth	Scenario C Individual Affluence	Scenario D Hardships	Scenario E Resource Allocation
Gross national product (constant 1975 dollars in trillions)	1,5163	2,2870	5,0610	4,8950	2,4870	3,5840
Gross national product per capita (constant 1975 dollars in thousands)	7102	9334	17634	19980	8665	13639
Disposable personal income per capita (constant 1975 dollars in thousands)	5043	6311	12019	13614	5866	9254
Personal consumption expenditures (constant 1975 dollars in trillions)	.9732	1,3920	3,0823	2,9811	1,5139	2,18213
Personal consumption expenditures for transportation, goods and services (constant 1975 dollars in billions)	126.00	171.79	339.56	396.64	199.15	260.31
Personal consumption expenditures for recreation, goods and services (constant 1975 dollars in billions)	66.00	217.85	223.00	223.00	102.46	157.40
Total government expenditures (federal, state, and local) as percentage of GNP (constant 1975)	35.01	56.38	45.66	58.19	57.49	57.43
Total social welfare expenditures under public programs as a percentage of gross national product (percent)	10.90	39.61	31.67	35.95	38.20	37.75
Civilian labor force (millions of persons)	92.6	115.9	137.6	130.1	117.7	122.5
Total labor force participation rate (number of persons 16 years of age and over in the total labor force as a percentage of the total non-institutional population 16 years of age and over (percent)	61.80	59.51	66.83	66.84	57.17	61.32
Average weekly hours of production workers on private non-agricultural payrolls (average weekly hours)	36.1	34.35	29.78	31.27	35.15	31.45

TABLE 1 (Cont.)
VARIABLES PROJECTED FOR EACH SCENARIO

SOCIOECONOMIC VARIABLES

Energy Related	1975	Scenario A Limited Growth	Scenario B Expansive Growth	Scenario C Individual Affluence	Scenario D Hardships	Scenario R Resource Allocation
Ratio of domestic production of crude oil, lease condensate, and natural gas liquids to domestic demand for refined products (percent)	0.6134	0.3077	0.3427	0.3433	0.2379	0.3603
Estimated landed cost in United States of imported crude petroleum from Saudi Arabia (constant 1975 dollars per barrel)	12.22	17.55	12.68	11.54	18.96	12.16
Average revenues per kilowatt hour, all sectors (constant 1975 cents/kwhr)	2.72	4.11	4.06	3.97	4.81	3.97
Business and Financial						
Index of industrial production (1967 = 100 percent)	113.80	190.05	448.14	432.61	203.95	308.25
Output per man hour of all persons in the private business sector (1967 = 100 percent)	110.20	162.63	347.10	334.79	174.75	243.64
Business expenditures on new plant equipment (constant 1975 dollars in billions)	113.50	186.32	431.01	412.09	200.54	298.41
Capital expenditures by business for air and water pollution abatement (constant 1975 dollars in billions)	6.20	15.56	17.48	17.79	13.24	16.59
AAA bond yields (percent)	8.83	6.04	7.80	7.48	9.25	6.01
Corporate investment funds from internal sources as a percentage of funds from all sources (percent)	56.20	49.91	37.13	38.12	49.37	43.93
Long-term funds raised in credit markets (constant 1975 dollars in billions)	34.00	87.72	248.88	236.55	95.45	161.39
Final sales of goods as a percentage of total final sales	45.20	41.05	34.11	35.08	40.66	37.15

TABLE 1 (Cont.)
VARIABLES PROJECTED FOR EACH SCENARIO
INTERNATIONAL VARIABLES

Demographic	1974*	Scenario A Limited Growth	Scenario B Expansion Growth	Scenario C Individual Affluence	Scenario D Hardships	Scenario R Resource Allocation
Population of European Community: France, United Kingdom, and West Germany (millions of persons)	170.51	184.32	204.42	184.32	204.42	191.36
Population of Japan (millions of persons)	109.65	149.52	165.67	149.52	165.67	157.89
Population of Latin America: Brazil, Mexico, and Venezuela (millions of persons)	173.97	356.69	429.11	356.69	429.11	384.77
General Economic						
Gross domestic product of the European Community: France, United Kingdom, and West Germany (constant 1974 dollars in billions)	823.33	1389.22	2988.76	2841.88	1583.84	2105.09
Gross domestic product of Japan (constant 1974 dollars in billions)	455.30	1169.30	3202.68	2668.78	1329.64	1836.05
Gross domestic product for Latin America: Brazil, Mexico, and Venezuela (constant 1973 dollars in billions)	(1973) 145.77	261.33	740.39	666.00	325.14	433.43

* Latest year available

TABLE 1 (Cont.)
VARIABLES PROTECTED FOR EACH SCENARIO
INTERNATIONAL VARIABLES

Trade and Investment	1974*	Scenario A Limited Growth	Scenario B Expansive Growth	Scenario C Individual Affluence	Scenario D Hardships	Scenario E Resource Allocation
U.S. exports to the European Community: France, United Kingdom, and West Germany (constant 1974 dollars in billions)	12.499	25.935	30.030	30.561	21.265	29.024
U.S. imports from European Community: France, United Kingdom, and West Germany (constant 1974 dollars in billions)	12.642	26.581	30.188	31.384	21.041	29.048
U.S. direct investments in European Community: France, United Kingdom, and West Germany (constant 1974 dollars in billions)	25.410	71.557	80.922	86.703	56.643	79.203
Investments in United States by European Community: France, United Kingdom, and West Germany (constant 1974 dollars in billions)	8.085	22.878	25.849	26.322	22.125	24.609
U.S. exports to Japan (constant 1974 dollars in billions)	10.678	27.890	33.195	32.145	25.862	29.891
U.S. imports from Japan (constant 1974 dollars in billions)	12.337	34.077	38.039	27.873	30.284	35.972
U.S. direct investments in Japan (constant 1974 dollars in billions)	3.319	8.800	10.116	10.396	7.788	9.525
Investment in United States by Japan (constant 1974 dollars in billions)	0.504	0.686	0.739	0.749	0.659	0.725
U.S. exports to Latin America: Brazil, Mexico, and Venezuela (constant 1973 dollars in billions)	(1973) 5.886	13.364	14.148	15.479	12.652	14.533
U.S. imports from Latin America: Brazil, Mexico and Venezuela (constant 1973 dollars in billions)	(1973) 5.282	9.367	10.089	10.332	9.198	10.164
U.S. direct investments in Latin America: Brazil, Mexico, and Venezuela (constant 1973 dollars in billions)	(1973) 7.315	14.309	15.082	16.929	13.293	16.208
External public debt outstanding (including undisbursed) to United States for Latin America: Brazil, Mexico and Venezuela (constant 1973 dollars in billions)	(1973) 4.805	8.298	8.615	7.650	9.004	7.751

aspects of the future believed to be crucial to the central problem being addressed; in this case, the socioeconomic environment which will influence the future of the National Aviation System. Second, some future developments are unforeseeable; that is, they are inaccessible by any forecasting technique.

The five scenarios developed for this study each represent differing solutions to the problems of economic growth and resource availability over the next 25 years. Table 2 compares the basic scenario positions. In selecting the scenario space to be covered, the role of national government was considered to be crucial in determining alternative future paths. Thus the scenarios are differentiated by governmental postures with regard to the currently existing and anticipated economic and resource problems as follows:

- The United States, faced with a sequence of problems at least partially attributable to a finite supply of resources, chooses to follow a path of deliberately limiting its economic growth rate (as described in the "Limited Growth" scenario).
- Technological progress leading to freedom from energy and environmental problems encourages a reduction in government regulation of industry and a rebirth of "free enterprise" (as described in the "Expansive Growth" scenario).
- Reacting to threatening economic problems, the United States chooses to move toward more centralized planning and is able to achieve high growth through government control of the economy (as described in the "Individual Affluence" scenario).
- The United States moves from crisis to crisis, attempting to "muddle through." Economic conditions become increasingly more difficult, and life in the United States is economically and emotionally depressed (as described in the "Hardships" scenario).
- The United States is set on a middle course in which the government successfully deals with resource problems through the establishment of firm allocation mechanisms (as described in the "Resources Allocation" scenario).

TABLE 2

BASIC SCENARIO POSITIONS

Characteristics	Resource Allocation Scenario R	Limited Growth Scenario A	Expansive Growth Scenario B	Individual Affluence Scenario C	Hardships Scenario D
Population growth	Moderate (2.1 births per woman)	Low (1.7 births per woman)	High (2.7 births per woman)	Low (1.7 births per woman)	High (2.7 births per woman)
Gross national product growth	Moderate (3.4 percent average annual growth rate, 1976-2000)	Low (1.5 percent average annual growth rate, 1976-2000)	High (4.9 percent average annual growth rate, 1976-2000)	High (4.8 percent average annual growth rate, 1976-2000)	Low (1.9 percent average annual growth rate, 1976-2000)
Government role	Substantial regulation for planned growth	Substantial control to achieve low growth	Little control, favoring a laissez-faire economy	Substantial regulation in a centrally directed economy	Ineffective and incapable of any sustained policy direction
Unemployment rate*	Moderate (6.5 percent)	High (7 percent)	Low (6 percent)	Very low (5 percent)	Very high (9 percent)
Raw materials	Emphasis on domestic sources and conservation	Limited exploitation of domestic resources	Full exploitation of domestic resources	Full exploitation of domestic resources	Limited exploitation of domestic resources
International relations	After a period of retrenchment, the United States provides a stabilizing influence in the last decade of the century.	The United States withdraws from global leadership, unable to prevent the rise of strong cartels for most of its needed raw material imports.	The United States is a dominant world power.	The United States is a dominant world power.	The United States is isolationist and fortress-like.

*Five percent is assumed to be the full employment rate.

While none of the scenarios is intended to be the most probable forecast, the "Resource Allocation" scenario is positioned in the middle of the scenario space. Its economic growth, population growth, and moderate technological developments place it between the four more or less optimistic scenarios. For [redacted] rather than because it is necessarily the most probable, the "Resource Allocation" scenario is defined as the "median scenario."

Projections of the selected variables for each scenario were made on the basis of assumed growth rates or for the majority of the variables by the use of trend impact analysis, a technique whereby projections based on historic trends are modified by events forecasted for a particular scenario. In constructing the scenarios, attempts were made to assure that events judged likely to occur in a scenario were not contradictory and that the projections of the variables were compatible with the characterization of the scenario. Where possible correlations or numerical relationships existed between the variables, these were explored to assure self-consistent projections. In examining the events and projections for consistency, institutional constraints which were already part of the system as well as those which might develop in the future were considered. Adjustments were incorporated where necessary to assure consistency among the projections of the variables and their compatibility with the sense of the scenario.

Projections were made for each of 46 variables for each of the five scenarios. The scenario narratives employ the results of these projections to describe the scenario development, and most of the variables are referred to in each scenario. However, to allow for clearer narratives, each scenario refers only to those variables which help explicate the particular trends and

events important for that scenario. Major events which were used to impact the variables projected by trend impact analysis also have been introduced into the scenario narratives.

Every reader will have his or her own view of which of these scenarios seems most probable. The ultimate success of the scenarios, however, will be their ability to depict the broad range of plausible "external worlds" which should be studied in planning for future NAS developments.

SCENARIO NARRATIVES

Resource Allocation, Scenario R
(Median Scenario)

In the late 1970's the implications of the growing dependence on foreign sources of energy and other raw materials finally brought the environmentalists, the consumers, and the producers together. By that time the effect of material shortages was seriously threatening the nation's basic economic stability. Escalating prices for raw material imports made it clear that the United States no longer could command an unlimited share of world resources. The response was a dynamic move to bring supply and demand into balance both by developing indigenous resources and by allocating resources by nationally agreed upon priorities. In setting these priorities, full analyses were made of all the societal costs and benefits associated with resource exploitation and use. Before the century ended the United States had become an example of effective resource management for other nations.

OVERVIEW

A strong commitment to resource allocation was established by the end of the 1970's. The need to allocate resources was accepted as the public began to show sensitivity to the problems of meeting the demand for both material and energy resources. By the close of the twentieth century the United States had achieved a satisfactory balance between domestic and foreign resource supplies and national needs.

When initially proposed, these restrictions were seen by certain segments of the population as representing a denial of the opportunity for self-improvement. The restrictions on resource usage also were seen as inhibiting economic growth, and neither private corporations (whose overriding motivations were growth and profitability) nor private individuals (whose demands were economic improvement) would volunteer to reduce consumption to levels that seemed necessary. Yet it became apparent to many members of society

that the ability to meet resource and energy requirements of the economy, either through stimulation of supply or through curtailment of demand or both, would determine societal well-being for decades to come.

The economy's inability to satisfy demands for energy and raw materials in the 1970's, at historical prices, while adhering to environmental restraints, had the most visible impact on transportation. Here the average citizen was dismayed by increasing costs, and equipment shortages resulted in decreasing service in the form of delays and discomfort. Rising gasoline costs did little to relieve urban vehicular congestion, but it clarified the need for public mass transit. With transportation keyed closely to industrial needs and leisure time, failure to meet demand adequately in these areas had threatening feedback effects on all parts of the economy.

Because freedom of movement had always been correlated with societal and economic well-being, jeopardy to this freedom led to the realization that unless changes were made, the choice was either environmentally unacceptable exploitation of domestic resources or dependency on foreign sources. The Resource Allocation Board, established in the late 1970's, was able to promulgate the idea of resource accountability, in terms of environmental impacts, social and economic impacts, and cost-benefit analyses for resource usage. By the end of the 1970's there was considerable debate about alternatives to existing patterns of resource consumption. This dialogue set patterns of development for the rest of the century. When a new energy source was considered, a total energy accounting was produced. This accounting included the energy investment that would be required to develop the new source before it would make a significant contribution. In addition to environmental impacts, all new industrial plants and processes

also were judged on the basis of the social and economic impacts that would occur if they were--or were not--developed.

During the period of readjusting domestic priorities, the United States made a gradual and limited withdrawal from the globally dominant position which characterized its foreign policy in the 1960's and early 1970's. Simultaneously, Europe, Asia, and Latin America were evolving toward greater regional integration and autonomy. In Western Europe leadership fell to an emerging German-French entente, while Latin America was increasingly influenced by the growing power of Brazil. These regional super powers, with frequent support from lesser powers in their regions, partially replaced U.S. influence as determinants of developments within their regions.

However, this U.S. retrenchment was essentially a response to the unique resource imbalances of the late 1970's and early 1980's and did not reflect any lasting shift in foreign policy objectives. Thus, as the United States overcame its resource related problems, it re-emerged to exert an important stabilizing influence on the world of the 1990's and beyond.

The resolution of energy supply and demand problems restored the confidence of the public in the United States. While foreign oil continued to be imported, the demonstrated possibility of increasing domestic oil exploitation and other energy related technological developments proved to be an adequate restraint on foreign producers. Increased efficiency of all resource usage created higher degrees of national self-sufficiency. By the 1990's the United States was exporting proven technologies in all areas of resource development.

SOCIOECONOMIC CONDITIONS IN THE UNITED STATES

Demography. Population growth in the United States continued at the levels of the 1970's for the remainder of the century, reaching about 234 million in 1985 and about 262 million by the year 2000 (Figure 1).^{*} While population growth was not considered a problem, reduction in population pressures was sought by developing Federal guidelines to serve as a voluntary framework for planning population distribution. To realize higher efficiency of resource usage, community development was discouraged in proximity to natural resources. By 2000 several new cities were developing around western geothermal sites and western coal sources.

Urban growth was strong as a result of the perception that suburban support for the city was necessary. As the nuclear city was revitalized, people exploited its social resources. By the 1990's mass transit systems were meeting the needs of high-density cities, and the discrete suburb of the mid-part of the century was disappearing. Many suburbs became incorporated into the boundaries of central cities. Metropolitan life was characterized by high-density patterns heavily dependent for mobility on public transportation. The last decades of the century saw the movement of people back to the city and the renaissance of urban life.

^{*}All figures are found together following the scenario narratives.

The share of the national population in the South* and the West* overtook that of the rest of the country, and the two regions comprised 56 percent of the total national population by the year 2000 (Figure 3). Urbanization patterns were changed. In 1970 the Northeast and North Central Divisions* led the South and West in degree of urbanization, about 76 percent to 71 percent, respectively. Increasing national wealth accompanying the development of resources encouraged urban growth. Thus, net gains in population due to migration accelerated urbanization of the South and West. By the close of the century, these two regions had about 94 percent of their population residing in urban areas, compared with 85 percent for the rest of the country (Figures 4 and 5).

Several megalopoli evolved: one running from Boston, Massachusetts, to Richmond, Virginia; a second in California, from San Francisco to San Diego; and a third from Milwaukee, Wisconsin, through Chicago, Detroit, and Cleveland and terminating in Buffalo, New York. These megalopoli were characterized by economic and cultural cohesiveness, though they tended to retain their multinuclear character. Within each megalopolis structure there remained urban concentrations around the several nuclear cities. In other parts of the country, urban concentration produced large cities of high density that tended to be well separated from each other. By 1985 it was possible to obtain among environmentalists, businessmen, and state and Federal politicians the consensus on land policies needed to pass legislation requiring states to develop Federally approved zoning plans. These state plans served as

*Four primary census regions are referred to: (1) the South, consisting of the South Atlantic, East South Central, and West South Central states; (2) the West, consisting of the Mountain and Pacific states; (3) the Northeast, consisting of New England and the Middle Atlantic states; and (4) the North Central Division, consisting of the East North Central and West North Central states. The South and West contained 48 percent of the total U.S. population in 1970.

the guide to Federal programs in the states, and they greatly influenced the growth and development of the urban environment.

Economic conditions. During the late 1970's the economy was relatively unstable and inflation rates were high. By the beginning of the 1980's legislation, deriving largely from the work of the Resource Allocation Board, provided a government commitment to research and development of alternative energy sources. At the same time, plans for mass transportation stressed fuel conservation, while the Federal land-use bill encouraged implementation of transportation modes consistent with acceptable environmental and economic impacts.

By the middle of the 1980's efforts to expand domestic resources and to increase efficiency in the use of all raw materials helped stabilize the economy, and a large measure of national confidence returned. GNP, which had declined for a period in the 1970's, grew at an annual rate of 3.3 percent in the 1980's and early 1990's. It leveled off at a rate of 3 percent by the end of the century, reaching \$3584 billion (Figure 6).^{*} GNP per capita reached \$13,660 by then (Figure 7). Disposable personal income per capita also grew moderately, averaging 2.4 percent per year for the last two decades of the century. The purchasing power of the consumer was strengthened slowly and remained relatively strong from the mid-1980's to the end of the century, and per capita DPI reached \$9280 in 2000 compared to \$4974 in 1976 (Figure 8).

After overcoming the initial resentment on the part of industry in the late 1970's, the Federal Government set a course which was aimed at restoring

^{*} All dollar values in the socioeconomic section are given in constant 1975 dollars.

historical growth trends. The character of the growth, however, was significantly different than that experienced from 1950 to 1975. The Federal Government, through a thorough planning perspective, began to orchestrate the mix of public and private roles in a manner which became accepted by the mid-to-late 1980's.

Industry, while monitored by the central government, was not obstructed in setting its plans for the future. Some observers noted that once industry had accepted the shape of the newly forged government-business relationship, economic activities actually seemed to be more well planned and coordinated than had been evidenced since the Korean War.

The index of industrial production grew at a rate of 3.7 percent annually from 1980 to 1990, and at a somewhat slower but healthy rate of 3.2 percent per year for the remaining 10 years of the century (Figure 10). Boosted by significant increases in research and development activities, including the needed capital spending, productivity (output per man-hour of all persons in the private non-farm economy) grew at an average annual rate of 2.9 percent from 1980 to 2000 (Figure 11).

Expenditures by business on new plant and equipment were strong, with growth averaging slightly more than 3.3 percent annually from 1980 to 2000 (Figure 12). These capital expenditures were facilitated by a well-functioning credit market. The AAA corporate bond rate leveled off at 6 percent in the early 1980's (Figure 13). In general, interest rates were at levels which had not been attained since the latter part of the 1960's and they reflected a low inflation rate and conscious effort by the Federal Reserve to keep interest rates low to aid capital formation. The fiscal and monetary policies adopted by the Executive Branch and the Federal Reserve, respectively, was

quite successful in maintaining low inflation (it averaged 3-4 percent over the 20-year period to 2000) and moderate interest rates. Federal economists had finally attained the goal of fine-tuning the economy.

The specter of "crowding-out" in the credit markets, popularized in the mid-1970's, never materialized because both government and industry were able to finance their needs with little difficulty. The historical trend in corporate finance of increasing dependence on external credit sources continued. Internally generated funds accounting for about 44 percent of total requirements by 2000 were down from 56 percent in 1976 (Figure 14). This reliance on external credit sources by corporate borrowers was supported by a steady but significant revitalization of equity and bond market performance, similar to that experienced in the late 1960's. Investor confidence had been restored by the early 1980's after an uncertain period during the late 1970's. This restoration of confidence permeated the entire economy by the mid-1980's--and was, of course, based on the cohesive alliance between business and government. The Federal Government had been the major driving force in the economy, and continued growth was predicated on firm, but not stifling, management of economic matters by the government.

The well-coordinated planning approach also benefited municipal governments. By the close of the 1980's the tax structure reflected a new partnership between the Federal and local governments. Expenditures by all levels of government had risen from 35 percent of GNP in 1975 to 57 percent in 2000 (Figure 15). Prior to 1990 the Federal Government's program for urban renewal included large support for the core cities. Through subsidies in the form of tax benefits, the Federal Government encouraged industry to remain close to the urban areas. As transportation development

was keyed to the increased density of urban life, many industries--prodded by government tax incentives--returned to urban areas in search of an adequate supply of labor. As the cities became economically viable, property taxes and local income taxes were sufficient to support urban budgets.

The Federal role in this achievement was underscored by the fact that the amount of mortgage debt held by Federal and related agencies had doubled from 1975 levels by the turn of the century. Federal support of both capital and operating funds of cities was directed primarily at assisting in urban planning and expansion (e.g., the Federal Government agreed to guarantee certain types of municipal securities), and the cities themselves were generally able to meet their operating expenses from their own revenues.

Progressive taxes were imposed on all energy uses, and the proceeds were funneled into energy production and conservation R&D programs. The automobile owner was faced with rising gasoline taxes and heavy levies on excessive horsepower ratings. Part of these taxes were used to support development of those forms of ground-based mass transportation that were shown to be environmentally attractive and that made efficient use of energy and raw materials. Thus, the automobile traveler provided much of the revenue to build the competing transportation systems. As ground-based mass transportation attracted more users, it had less need for Federal support.

As the 1990's came to a close, the reliance on Federally planned initiatives had become so well entrenched that all sectors of the economy seemed to be well-functioning and content within the context of Federal management and direction. In fact serious consideration was being directed toward the implementation of wage, price, profit, and interest rate controls by the

Federal Government. This move was proposed to enable the government to maintain its firm but successful management of the economy. The fact that consumers and industry alike were able to see merit in such an approach was perhaps the best tribute to the socioeconomic pact that had evolved over the previous two decades.

Energy and materials. The price of energy in the United States stabilized in the early 1980's due to increasing supplies of expanded domestic sources, particularly coal gasification, and the application of geothermal and solar energy for space heating and process heat. Conservation efforts aimed at reducing oil consumption also played a large role in reducing price pressures on petroleum. Efforts were made to increase exploration for, and exploitation of, new domestic oil sources at economically acceptable prices. Coal and nuclear fuels were heavily promoted for electrical generation, especially to decrease reliance for energy on limited oil reserves. By 1995, 75 percent of electricity was derived from these fuels. The average price of electricity for all sectors climbed steadily from the 1975 value of 2.72 cents per kilowatt-hour, reaching 3.97 cents per kilowatt-hour at the end of the century (Figure 18). By 1990 the ratio of domestic production of crude oil to consumption was about 0.55, still continuing the downward trend from 0.61 in 1975 (Figure 19). However, while imports of foreign oil remained high, available alternate energy sources and the demonstrated potential for exploitation of domestic oil at prices in excess of \$12 per barrel provided the necessary leverage to control excessive price rises by OPEC. Though the production to consumption ratio reached 0.36 by 2000, oil demand itself was held to the levels of the mid-1980's.

Many corporations initiated detailed investigation of potential future shortages of raw materials in order to structure their R&D programs and minimize the impacts of such shortages. In an atmosphere of enhanced social consciousness industry cooperated with government in setting and achieving priorities for material flows. Recycling became a major new business, and by 2000, one-half of consumer durables were fabricated using recycled material.

Human resources and life-style. The emphasis that was placed on the planned allocation of natural resources was carried over to the improvement of human resources as well. A Federally sponsored national health care program was established that offered a wide range of medical and health services. By 1985 the Federal Government had assumed full responsibility for all public aid payments. Government spending for all social welfare under public programs increased substantially, from 19 percent of GNP in 1975 to 38 percent by the end of the century (Figure 21).

The emphasis on resource R&D brought an increasing proportion of the labor force into professional and technical areas. Many workers required retraining to adapt to the demand for skills in resource exploration, development, and application. By 1985 the average level of unemployment was reduced to about 6.5 percent, and it remained essentially at that level to the end of the century. Job satisfaction was high as workers shared in managerial decisionmaking through widespread institution of worker democracies. Gains were made in reducing the workweek in the major industries, as productivity levels and employment continued to increase. The average hours worked per week declined from about 36 hours in 1975 to about 33 hours by the late 1990's (Figure 22). The labor participation rate remained close to the 1975 value of 0.61, and by the end of the century the labor force stood at 122 million people (Figures 23 and 24).

Retired persons, finding it increasingly easy to move about within the metropolitan areas, were attracted to the cultural benefits of urban life. Life-styles emphasized a greater interaction among people of different socioeconomic backgrounds and participation in a developed urban culture that had become readily accessible. Furthermore, the highly urbanized life provided abundant opportunities for continuing one's education, and the median level of education rose from 12.3 years of schooling in 1975 to 14.1 years by the year 2000 (Figure 25). By the close of the century, most employers were providing scholarship assistance to employees and their families as a part of their employee benefit package.

The emphasis on personal interactions was supported by the responsiveness of the transportation system. Although fuel costs tended to remain relatively high, DPI per capita was adequate to meet the prices of public transportation. Costs were controlled by adjusting subsidy levels for various modes, particularly for the mass transit system. The ability to achieve an effective transportation system was supported by the acceptance of telecommunications as a resource beneficial alternative to travel. While telecommunications tended to substitute primarily for business travel, the use of telecommunications for personal needs (such as for shopping, for home study courses, and even for visiting) grew. By 2000 telecommunications were relieving the demand on both inter- and intra-urban transportation systems. The annual growth rate for PCE for transportation was maintained near its historical level at about 3.5 percent to about 1990. It then exhibited slow growth, dropping to 2.1 percent per year for the rest of the century. PCE for transportation reached \$260 billion by 2000, double the 1975 value of \$126 billion (Figure 26).

Accessible mass transportation within the large urban areas allowed people to be drawn together by frequent visits. The growth in importance of family and friends marked a significant change in the outlook of the nuclear family from that of the 1950's and 1960's. With both parents at work and children in school most of the day, much leisure time was devoted to periodically bringing all age levels of the family together. PCE for recreation increased at nearly its historical growth rate of 4.5 percent per year, rising from \$66 billion in 1975 to \$157 billion in 2000 (Figure 27).

Beginning in the late 1970's, the programs of resource allocation, which emphasized transportation, had developed achievable national goals. A national spirit and purpose, similar to that of the space program of the 1960's and indeed borrowing on much of the technology and technical capability that had been developed in the program, allowed the United States to provide a model for management of scarce national resources for other nations to emulate. The success of the United States in providing for more efficient use of its resources secured its position as an industrial leader for nations faced with similar problems. While the United States continued to import needed raw materials, more efficient usage of these materials limited its drain on world resources. Thus, the United States, by the end of the twentieth century, was able to insure that raw material demands would be met. This was largely fostered by the government's encouragement of careful resource usage.

INTERNATIONAL CONDITIONS

The U.S. role in the world. The U.S. relationship with less-developed countries (LDC's) was complicated during the late 1970's and early 1980's by repeated and unsuccessful attempts on the part of resource-rich LDC's to restrict the supplies of certain raw materials through artificial limitations on production and exports. Cartels were formed for such raw materials as bauxite, manganese, tin, and chromium. The North-South split deepened in the United Nations and in other international organizations on such issues as law of the sea, technology transfer, and legitimate trade arrangements for food and minerals. In Latin America, Brazil emerged as the leader of a unified Latin American Economic System.

U.S. relationships with the European Community (EC) suffered a slow deterioration during the late 1970's and early 1980's as uncertain access to resources contributed to increased pressures for trade protectionism and government intervention to maintain artificially low currency exchange rates. The major trade negotiation within the General Agreement on Tariffs and Trade ended inconclusively. Within the EC the trend toward regional integration was interrupted. Efforts to achieve monetary union were unsuccessful, and internal economic policies remained largely autonomous.

Japan, which felt increasingly insecure as U.S. attention to East Asian developments receded and tension on the Korean peninsula increased, began to improve its relationships with the People's Republic of China (PRC) and other South Asian powers. An incipient East Asian co-prosperity sphere began to emerge, while U.S.-Japan economic and military ties suffered a slow erosion. This was expressed in periodic disputes concerning continued Japanese trade and investment restrictions.

As U.S. resource management improved in response to active government policies and technological innovations during the late 1980's, the U.S. position in the world was partially restored, but without the predominant influence or global interventionist aspirations which characterized U.S. foreign policy in the 1960's and 1970's. The regional coalitions which had emerged during the late 1970's and early 1980's continued to figure importantly in international politics, but now with the United States occasionally lending its weight to one or the other coalition, depending upon U.S. interests. The United States began to serve as a mediator in intra-regional differences which threatened to undermine regional harmony and invite intervention by the Soviet Union and the People's Republic of China. In effect, U.S. foreign policy stabilized on the basis of diplomatic and occasional military support for cohesive, regional coalitions which shared U.S. interests in preventing domination by America's adversaries.

U.S.-Soviet relations remained stable throughout the period, with the inevitable underlying tension expressed by occasional disputes on control of nuclear weapons and the threat posed by increased Soviet troop levels in Europe and the Far East. Increased political dissent in Eastern Europe and Soviet threats to use force against such countries as Romania, Yugoslavia, and Poland became an important source of discord between the Soviets and the United States. Border disputes between the Soviets and the PRC also became a diplomatic issue in the triangular relationship between the United States, the Soviet Union, and the PRC.

The relationship between the developed countries and LDC's improved during the late 1980's as the United States led a successful effort to negotiate export price guarantees and debt relief agreements for certain LDC's,

including Brazil and Mexico. These policies were successful in stimulating trade and investment flows between the United States and Latin America. Relationships between developed and underdeveloped countries also improved in such fields as technology transfer, control of nuclear proliferation, and conflict management through a rejuvenated United Nations.

This growing coincidence of interests between developed and less developed countries as well as successful resource management among the developed countries, new sources of petroleum from the United Kingdom, Mexico, and the PRC, and a united developed country position on petroleum development all contributed to increased pressure on OPEC. The result was a greater frequency of cheating through increased production and price cutting on the part of certain OPEC members, and a stabilization of OPEC prices at \$13.16 per barrel by the year 2000 (Figure 46).

The U.S. relationship with the EC also improved in the late 1980's as successful resource management stimulated greater economic growth in Europe and increased levels of trade and investment between the United States and the EC. U.S. exports increased from \$12.5 billion in 1974 to approximately \$29 billion in the year 2000; U.S. imports from the EC increased from \$12.6 billion in 1974 to \$29 billion in the year 2000 (Figures 34 and 35).^{*} Two-way investment between the United States and the EC tripled between 1974 and 2000 (Figures 36 and 37).

Despite reduced protectionism and increased levels of economic exchange, the U.S. relationship with Europe never again achieved the intimacy which prevailed during the 1960's and 1970's. The European states, having emerged from the traumatic period of the mid-1970's with their economies intact and

^{*}1974 dollars.

in greater unity, now frequently departed from U.S. policy on various global issues and successfully resisted renewed U.S. efforts to achieve a unified North Atlantic community. Internally, the European Community resumed its evolution toward confederation, with greater foreign policy and domestic economic coordination but without the growth in supranational institutions.

During the late 1980's and beyond, Japan became disillusioned with its regionally originated policy of the late 1970's, as smaller states in the Far East became increasingly resentful of Japanese economic domination and the PRC relapsed into isolation. For Japan this entailed larger military forces as well as independent foreign policy initiatives toward the Soviet Union, and an increased degree of diplomatic coordination with the EC.

Issues. The period between 1977 and 1985 was dominated by concerns of resource allocation. The widespread perception of scarcity among the developed countries of the world lent controversy to any foreign policy objective which implied resource commitments to allies or allocations required to enhance military strength against the threats of adversaries. Relationships between developed and underdeveloped countries deteriorated markedly as the LDC's sporadically restricted mineral supplies and developed countries mined the seabed in contravention of international agreements. International organizations were immobilized by the polarization between developed and less-developed countries, while relationships among the developed countries were adversely affected by the political strength of trade protectionist forces.

As developed countries achieved more effective resource management in the late 1980's, sacrifice of sovereignty to international institutions became an important issue among the developed countries. The extent to

which national economic policies should be coordinated in a common effort to avoid inflation and recession was debated frequently. At the same time, developed countries were united by a growing fear of Soviet military capabilities as conventional security issues became increasingly important in East-West relations.

Relationships between developed and developing countries during the 1980's and thereafter were heavily influenced by disagreements on an equitable global distribution of wealth. However, developed country efforts to accommodate the needs of less-developed countries for increased income began to take the heat out of these debates, while issues of global ecology (e.g., ocean and atmospheric pollution, food contamination, etc.) became increasingly matters for international concern as well as a source of renewed strength for international organizations.

Regimes. Major market-oriented industrialized countries in the late 1970's and early 1980's were characterized by increased domestic interest group pressures in the area of foreign policy formulation, a diminished consensus on foreign policy means and ends, and a resulting inability of governments to take bold foreign policy initiatives. This was especially true of democratic countries, particularly the United States, the European community, and Japan, in which foreign policy was increasingly subordinated to domestic politics. This subordination had the effect of complicating the maintenance of smooth-working relationships in such areas as trade, investment, and defense.

As these market economies begin to emerge from the resource-related crisis of the early 1980's, a degree of domestic consensus was restored in

the realm of foreign economic policy, diplomacy, and strategy. This consensus, however, was somewhat more tenuous as a result of greater interest in group involvement in the formulation of foreign policy.

The major socialist countries (the Soviet Union, Eastern Europe, and the PRC) remained highly autocratic throughout the period, at the cost of increased coercion internally and a preoccupation with the maintenance of political authority. While these countries continuously increased their resource commitment to defense, their foreign policy flexibility was limited by fears of contact with the West and the problem of maintaining authority internally. There was a slowdown in growth rates in Eastern Europe, the Soviet Union, and the PRC and increased tension within the Council of Mutual Economic Assistance (CMEA). Expansionist policies were difficult to adopt despite the military capabilities to do so. Thus, while the level of military forces maintained by the Warsaw Pact countries continued to generate tension with the West, actual foreign policy behavior of these countries was not sufficiently aggressive to disrupt détente.

Less-developed countries continued to exhibit a one-man or one-party military rule, with frequent changes in government, few of which had any important impact on domestic or foreign policies. LDC regimes were revolutionary in their domestic politics and in the demands they placed on developed countries. These demands became somewhat muted during the 1990's, however, as the United States and other developed countries sponsored increased flows of technology and aid as well as improved terms of trade with the LDC's.

Actors. The principal actors in international politics continued to be nation states. During the late 1970's and early 1980's regional coalitions played an increasingly important role among resource-rich LDC's. East-West relations lost their bloc-to-bloc characteristics. Developed country multilateral institutions, including the General Agreement on Tariffs and Trade (GATT), the Organization for Economic Cooperation and Development (OECD), and the International Monetary Fund (IMF) were stagnant during the 1970's and early 1980's as domestic politics progressively narrowed the scope for international cooperation. International organizations were weakened by East-West and North-South disputes which prevented them from expanding their authority. Only those organizations with specific functional responsibilities, such as the International Seabed Authority, the U.N. Environmental Program, and the World Meteorological Organization, were able to play more prominent roles in international relations.

As the major market economies achieved effective balance between resource supplies and demands in the late 1980's, institutions devoted to normalizing relationships among developed countries reasserted themselves. This was the case for GATT, OECD, and IMF, which again became vehicles for coordination of national economic policies. As relationships between developed and less-developed countries improved, international organizations devoted to bridging the gap between rich and poor--the UN Conference on Trade and Development, the Conference on International Economic Cooperation, and so on--also became important arenas for negotiations between less-developed and developed countries.

Technology. Technology became an increasingly important factor in international relations as its influence on economic development and new forms of warfare and crisis management became clear. Communications technology, especially during the mid- to late-1980's, became integral to the management of adversary relationships in avoiding miscalculation and inadvertent warfare. New methods of improving the photosynthetic capabilities of certain plants began to be applied widely among LDC's, with important benefits for their agricultural productivity. New raw material extractive technologies (e.g., technologies to mine manganese nodules from the seabed) became important as sources of raw material independence.

Continued discrepancies between developed country and less-developed country technological development generated strident demands for technology transfer and came to preoccupy certain international organizations during the early 1980's. The United States and other developed countries were responsive to these demands as they themselves achieved greater resource independence and successfully encouraged the transfer of a wide range of civilian technologies to the LDC's.

The issue of technology transfer also became an increasingly important element in East-West relationships. As doubts about Soviet intentions increased, technology was increasingly utilized by the United States and other Western governments as an instrument of diplomacy. Controls on the export of a wide range of sophisticated civilian and military technologies to Eastern Europe and the Soviet Union were implemented, while governments increasingly manipulated technology transfers to LDC's in order to thwart Soviet ambitions among the LDC's.

Limited Growth, Scenario A

During the 1970's the United States became largely convinced that unlimited industrial expansion could not be supported without serious environmental impairment. Resentment by the less-developed nations that the developed countries were consuming a disproportionate share of world resources added to the national concerns. It was perceived that shortages of critical raw materials, increasing prices, and difficulties in achieving a stable relationship between energy demand and supply were leading to a serious economic crisis. The gathering ills seemed to validate the "limits to growth" philosophy that uncontrolled growth is intrinsically wrong and that it can only lead to ultimate economic disaster. The government accepted deliberate limitations to growth as the only logical recourse and adopted policies that slowed the country's rate of economic expansion. Personal life-styles were altered, and there was a reduction in population growth rate. Low resource-consuming activities were substituted for material demands, and personal constraints were accepted that would have been largely unthinkable in 1970.

OVERVIEW

America ushered in the twenty-first century with an attitude of resignation. Deliberate government efforts had succeeded in slowing the growth in all forms of demand and in easing pressures on domestic resources. The cost of achieving economic stability through limited growth policies was a reduction in socioeconomic and physical mobility coupled with little enthusiasm for risk-taking and adventure-seeking.

In the 1970's there was alarm that the unlimited industrial expansion would have catastrophic effects on the environment, with the attendant risk of serious resource depletion. Escalating resource prices were threatening to disrupt the economy, and eventual economic disaster was feared. In this atmosphere the "limits to growth" argument took root. Through the large presence of the Federal Government, economic growth was directed toward resource-conserving activities.

The slow GNP growth that characterized the U.S. economy was also reflected in the lifestyles of the population. Telecommunications, for example, was seen as being resource efficient and provided an acceptable alternative for business and personal contacts. Concentrated city life was seen as an economically efficient social system, and Federal policies were continuously adjusted to provide for urban restoration. Urban centers, which were the focus of economic life, increased in density as the growth of suburban sprawl slowed. The Federal Government, through extended revenue-sharing programs with the cities, tried to encourage migration from the low-density suburbs to the cities, where urban transit could help solve the problems of local transportation. By underwriting programs for urban development, the Government provided the cities with more possibilities for employment. With increased emphasis on urban centers, human services in health and education were more readily available, and the satisfaction of fundamental needs tended to help diminish societal tensions.

As the 1980's unfolded, international politics were affected by the gradual, irreversible withdrawal of the United States from its position of former primacy. This withdrawal, unaccompanied by the achievement of regional solidarity within Europe, the Far East, or Latin America, produced uncertainty in international relations. Collective security arrangements such as the UN and international functional institutions eroded, but were not replaced by alternative systems for achieving international consensus and resolving international disputes. This uncertain character of the international system caused some formerly aligned countries such as France, Spain, and Portugal to seek the protection of neutrality; it forced other middle range powers to shift allegiances towards larger powers in closer

geographic proximity than the United States; and it stimulated imperial aspirations among potential regional superpowers, such as West Germany, India, Japan, and Brazil.

The U.S. relationship with less developed countries was strained by efforts on the part of LDC resource exporters to restrict exports of raw materials. In fact it was the establishment of successful cartels for several key imported materials (bauxite, manganese, chromium and tin) as well as the continued control of oil prices by OPEC which helped precipitate the limited growth policy. By the close of the century the United States had achieved stability. The country was looking more inward than outward, as the government continued to exercise restraint on the nation's growth.

SOCIOECONOMIC CONDITIONS IN THE UNITED STATES

Demography. Economic uncertainties, coupled with government programs to limit population growth, lowered the fertility rate to 1.7 live births per woman. The population reached about 228 million by 1985 and 245 million by the year 2000 (Figure 1).^{*} Emphasis on responsible family planning was encouraged by the Federal Government through the dissemination of contraceptive information and ready availability of abortion on demand, and in the 1980's, through income taxes which favored smaller families.

^{*} All figures are found together following the scenario narratives.

High-population densities in the urban environment allowed for favorable economics in the total costs for transportation and the delivery of most social services. By the close of the century, Federal funds for community development had tripled over the 1970 expenditures. Urbanization was accelerated by the government assistance to the cities, and by 2000, 92 percent of the population in the combined South* and West* and 86 percent of the population in the combined Northeast* and North Central Divisions* lived in urban areas. This represented a rather significant change from 1970 when the urban percentage for the combined South and West was 71, and for the Northeast and North Central Divisions was 77 percent (Figures 4 and 5). In its effort to encourage migration to regional urban centers, the government subsidized the relocation and retraining of needy rural people. Cities were characterized by high-rise, multi-unit dwellings. Massive investment of government funds in urban transit systems provided excellent intracity mobility and sharply curtailed use of the private automobile in city traffic.

The percentage of the national population living in the South and West continued to climb. States in temperate areas of the country with Federal encouragements offered significant tax incentives to accelerate the introduction of new industry. By 2000 these two regions accounted for 56 percent of the total national population, compared with 49 percent in 1975 (Figure 3).

*Four primary census regions are referred to: (1) the South, consisting of the South Atlantic, East South Central, and West South Central states; (2) the West, consisting of the Mountain and Pacific States; (3) the Northeast, consisting of New England and the Middle Atlantic states; and (4) the North Central Division, consisting of the East North Central and West North Central states. The South and West contained 48 percent of the total U.S. population in 1970.

Economic conditions. In the late 1970's competition for resources had produced rapid price increases and led to a threatening deterioration of economic conditions. The cost of energy in the international market had created enormous balance-of-payments deficits for the United States, which were aggravated by the formation of cartels for other key raw materials that were imported. Purposeful reductions in the growth of resource demand were seen as the only way to avert impending economic collapse. By the 1980's the government had accepted the notion that a tightly-monitored economy could lead to the needed stabilization. Wage, price, profit, and interest-rate controls were established. These controls were used to govern the behavior of both industry and labor in an atmosphere where the Federal Government was quite conscious of any economic interest group which seemed in opposition to stated government policies. The direction of government policy was clearly seen in the imposition and continued maintenance of these permanent controls, although inflation ranged only from 2 to 4 percent in the last two decades of the century.

GNP growth slowed to about 1.1 percent annually from 1980 until the end of the century. In the 1990's GNP growth was less than 0.9 percent annually. By 2000 GNP stood at only \$2287 billion (Figure 6), while GNP per capita grew to only \$9330 (Figure 7).*

The purchasing power of the consumer was not strong enough to supply the individual with a standard of living substantially in excess of that of the 1970's. Personal income tax levels remained high. Disposable

* All dollar figures are in constant 1975 dollars.

personal income per capita, which was \$5043 in 1975, rose to only \$5870 in 1985 and increased to \$6311 by 2000 (Figure 8). The average annual rate of growth in personal consumption expenditures declined markedly from the post-World War II period level of 3.3 percent to 1.5 percent for the last quarter of the century. The PCE reached about \$1200 billion by 1985 and about \$1500 billion by 2000, up from \$973 billion in 1975 (Figure 9).

One major factor that made the acceptance of the low-growth policy acceptable to middle America was the reorientation of tax policy. In the past the bulk of the middle class had been extremely wary of any policy move that had restricted the possibility for upward socioeconomic mobility. Just the existence of an upper class had seemed to reinforce the tenacity of the less fortunate in clinging to the hope for economic improvement. When, however, the tax laws were overhauled, the so-called upper class bore the brunt of the newly imposed statutes. The middle class in effect saw their relative income position improved and although their expectations of major income gains were small, this redistribution was one of the keys in making the low-growth policy workable.

While there was a very direct government presence in all sectors of the economy, most of its policies were aimed at ameliorating dislocations that were resulting from the conscious low-growth posture. Specific examples of this type of government intervention were: subsidizing the retraining and relocation of needy rural workers, establishing a guaranteed minimum income, Federally controlling all public aid payments, and attempting to restrict growth of the labor force by encouraging early retirement and longer schooling.

The rather chaotic conditions of the late 1970's included a recession more serious than that experienced in 1973 and 1974. In fact, capacity utilization in manufacturing fell to 70 percent and remained at or below that level for 8 consecutive quarters during the late 1970's. In retrospect many observers cited this recession and its resulting national frustration as one of the principal forces behind the adoption of the low-growth policy. The recovery from the recession was cautiously lead by Federal authorities, and by the early 1980's GNP growth was restored, though it never reached a level of more than 1.1 percent per year.

The index of industrial production paralleled GNP growth, but at a slightly higher level. It averaged 1.4 percent annual growth in the last two decades of the century (Figure 10). Productivity (output per man-hour of all persons) grew at about 1 percent during the same period (Figure 11). Business expenditures for new plant and equipment resumed a steady growth by the early 1980's, and averaged 1.2 percent per year for the period 1980 to 2000 (Figure 12).

The capital markets themselves were healthy, but their activity levels were sharply curtailed. The AAA corporate bond rate leveled off at about 6 percent by the mid-1980's (Figure 13), and it reflected the reduced demand for capital and also a greatly reduced inflation rate. While the historical trend of growing business reliance on external funds continued, the rate of increase slowed rapidly, and by the end of the century approximately 50 percent of corporate investment funds were raised in external credit markets. The reliance of business on long-term versus short-term credit funds approximated the historical average (i.e., 70 percent long-term and 30 percent short-term). The amount of long-term funds raised in the credit

market (stocks, bonds, and mortgages) grew at a low, but steady pace (1.9 percent annual growth) throughout the mid-1980's and 1990's (Figure 16).

Municipal governments were greatly aided by Federal initiatives in transportation and housing. Federally guaranteed municipal bonds were established to further bolster municipal finance. By 1990 government funds were being raised by a variety of taxes on virtually all commodities and services. Government spending grew from 35 percent of GNP in 1975 to 56 percent of GNP by 2000 (Figure 15).

The two decades prior to the end of the century saw a steady increase in the sphere of government influence. The Federal Reserve Board and the U.S. Treasury combined to implement an appropriate mix of monetary and fiscal policies to support the stated low-growth policy of the Executive and Congressional branches. The Federal Reserve Board kept firm control of the money supply. It was designed to provide just enough liquidity in the credit markets to maintain the low, but steady growth in activity. While Federal expenditures grew significantly in relation to GNP, the Treasury was careful to avoid any undesirable stimulus to the private economy. The tax system had evolved into a well-balanced and efficient vehicle in supporting Federal fiscal needs, while at the same time allocating just the proper amount of funds for private sector viability. In fact, careful and successful management of the national economy was the essential ingredient for continuation of the low-growth policy of the Federal Government. Most segments of society seemed content, and there was little dissatisfaction with government economic policy and direction.

Energy and materials. The pressure of energy demand on both domestic and foreign sources was eased due largely to the slowdown in economic growth, thus, the prices of energy kept to moderate levels of growth. Reduction in

the growth of demand helped to keep the ratio of domestic production of crude oil to domestic demand to about 0.48 by 1990, compared with 0.61 in 1975 (Figure 19). By the end of the century, however, the ratio fell to 0.31. But the oil demand had grown slowly from mid-1980 levels, held down by the slowdown in economy.

Reduction in growth of demand for essential raw materials was aided by the decline in economic growth. Efforts were made to direct material flows into production patterns that would not dislocate the low-growth economic policies. While policies of limited growth reduced demand, they also reduced supplies. Raw materials were in short supply, and rationing continued to be necessary for the rest of the century in order to maintain an effective balance between supply and demand. The desire to minimize environmental impacts continued to be a burden to domestic resource exploitation. However, in order to lessen economic disequilibrium, pollution abatement requirements were allowed to be relaxed as industrial growth slowed and as acceptable pollution levels were reached due to the overall decline in industrial output.

Human resources and lifestyle. The generally sluggish economy resulted in moderately high unemployment, which averaged about 7 percent from 1980 to the remainder of the century. Emphasis was placed on income redistribution through taxation, with the government expanding social services in the form of health care and education. As industry adjusted to government control of material and energy, some sections of the labor force periodically experienced high levels of unemployment, reaching to 9-10 percent for intervals of several months. By 2000 the government was providing a guaranteed annual income to reduce the effects of these

cyclical periods of economic stress. And by 2000 social welfare expenditures reached nearly 20 percent of GNP, up from 19 percent in 1975 (Figure 21).

While the disparity in income between the highest and lowest income groups in the country diminished, competition for jobs was relatively high. The low rate of economic growth, however, discouraged women from entering the labor force. Early retirement policies were encouraged, and longer periods of public education promoted to reduce the size of the labor force. The labor participation rate declined from the 1975 value of 0.61 to 0.59 in 2000, when the labor force reached 116 million people (Figures 23 and 24).

Education took high priority as a non-resource consuming pursuit. The equilibrium that had been forced on the economy, however, tended to limit career-advancement opportunities. Schools taught leisure subjects to young people who were not expected to seek jobs that would be their central life interest. As a result, historic middle-class attitudes toward work were replaced by development of strong avocational interests. The emphasis on resources conservation found its way into school curricula which stressed consumption patterns that did not stimulate production. The level of median education rose moderately over the years, reaching 13.8 years in 2000, from a level of 12.3 years in 1975 (Figure 25).

Because of the uncertain energy supplies, which continued for the remainder of the century, telecommunications as an alternative to travel played an increasingly important role in all aspects of American life, especially since they were viewed as being conservative of resources. Telecommunications were used primarily for exchange of business information, for business conferences, and on a personal level as a continuous source of leisure-time diversion in the home. The slow growth of the economy

further reduced travel, and personal consumption expenditures for transportation climbed to only \$168 billion at the close of the century, up from \$126 billion in 1975 (Figure 26).

By the 1990's the compromise between individual choice and the good of society was reflected in a changed urban lifestyle. Even though the evolving nuclear cities had highly aggregated populations, problems of crowding were minimized by urban planning which attempted to assure accessibility to all city functions and services. Though developed mass transit gave mobility to city dwellers, intra-urban travel was still regarded as resource consuming. Much child supervision and schooling was carried on by means of telecommunication. Young children at home found themselves responding to a video screen as one of their primary contacts with the outside world, in this way coming to accept telecommunications as an alternative to travel.

People who had not found satisfying careers because of limited economic growth looked upon retirement as a time for reward. Retirement often led to changes in lifestyles as older people tended to congregate in large communities devoted to their social, political, and economic interests. These retirement centers were generally located in temperate climates.

The twentieth century closed with a United States preoccupied by the need to be watchful over the balance between resource supplies and demands. Individual patterns of consumption were limited by societally accepted constraints in resource usage. Government's position on successfully limiting both economic and population growth gave it a large presence in the lives of all Americans.

INTERNATIONAL CONDITIONS

The U.S. role in the world. It had become obvious by the mid-1980's that U.S. influence on events beyond its borders had been severely reduced, largely as a result of diminished economic growth and a lack of domestic political consensus to support global foreign policy objectives. The United States continued to maintain nuclear forces capable of preventing any direct Soviet or People's Republic of China (PRC) threat to the territory of the United States or of Latin America. However, the ability of the United States to intervene globally, to influence conflicts among less developed countries (LDC's) or in Europe, and the U.S. leverage on international events generally, were in decline throughout the period. There was greater flux in international relations, an increase in the level of tension and terrorism, spreading conflicts among LDC's, the re-emergence of old European rivalries, and greater Soviet influence in the Middle East, Africa, and Asia. Although a certain degree of consensus in the United States was reestablished during the 1990's, this consensus was fragile, based on very limited means and ends, aimed at accommodating and adjusting to, rather than influencing, foreign events.

U.S.-Soviet relations exhibited a certain comity which merely obscured underlying, basic incompatibilities in ideology and interest. Certain areas of common action did, of course, remain, including agreements on non-proliferation of nuclear weapons, maintenance of trade in raw materials and technology, agreements on limiting the development of new weapons systems, and the avoidance of nuclear war. However, beyond these common elements, U.S.-Soviet interaction was characterized by increased suspicion and doubts in the United States as to whether the relationship was mutually beneficial. These doubts

among the U.S. public were reinforced by Soviet military spending which, because of an inability to expand U.S. defense spending in the face of limited resources, continued to increase at rates more than twice those in the United States, and by the Soviet's increased ability to extend its influence globally in the face of U.S. uncertainty and political divisiveness. The ultimate result of this disparity in power between the United States and the Soviet Union was a series of implied agreements legitimizing this improved Soviet position, particularly in large parts of Africa, Central Europe, and the Mediterranean.

While the Soviets did not dominate these regions, it became clear during the mid- to late 1990's that increased Soviet influence had neutralized these areas as potential sources of support for U.S. diplomacy. The major barrier to Soviet expansion in Asia was no longer U.S. commitments to its Southeast Asian allies, but an increasingly assertive and modernized PRC which during the mid-1980's emerged from the domestic turmoil of the post-Mao period.

The one area relatively free of Soviet influence continued to be Latin America, over which the United States asserted the Monroe Doctrine in defense of its vital interests on the continent. However the United States was powerless to prevent increased guerilla warfare. This implicit U.S.-Soviet division of the world into spheres of influence, with the U.S. sphere truncated and under tenuous control, was the basis for a U.S.-Soviet accommodation of the mid- to late 1990's.

The U.S. relationship with LDC's was highly conflictual, marred by persistent and successful efforts on the part of LDC resource exporters to restrict their exports of raw materials. Successful cartels were established for such minerals as bauxite, manganese, chromium, and tin. Despite declining economic growth rates in developed countries, the Organization of

Petroleum Exporting Countries (OPEC) cartel maintained its cohesion throughout the period, and even expanded its membership to include Mexico and Brazil. The price of OPEC crude oil increased throughout the period to the level of \$17.55 per barrel by the year 2000 (Figure 46). While developed countries attempted to minimize the extent of OPEC price increases by entering into indexation agreements with the cartel, these agreements simply perpetuated the cartel, lending it durability and greater cohesion. Simultaneously, low growth in most of the developed countries forced a retrenchment in aid and declining trade and investment with LDC's. As receipts for raw materials exports increased only for the resource rich LDC's, disunity within the ranks of LDC's increased.

U.S. relations with its European allies became less interdependent strategically, as the lack of foreign policy consensus in the United States led to a reduction in U.S. presence and deprived its treaty commitments to the defense of Europe of credibility. The increased political influence of protectionist forces within developed countries, which resulted from the slackening of economic growth, reversed the trend so evident in the 1960's toward free trade and investment. Amid increased protectionism, the developed country economic order gradually dissolved, first into regional blocks, then into uncoordinated national actions. While European Community (EC) institutions continued to function, they were progressively deprived of substance as most efforts to achieve cooperation in the spheres of trade and finance failed. The European-wide order was replaced by a developing entente between France and West Germany.

As the costs of growing restrictiveness in international economic policy were realized, a greater degree of free trade and investment returned in European and U.S.-EC relations. However, the close strategic, economic, and diplomatic linkages between the two regions were never fully restored, and formal U.S.-EC supernational institutions remained dormant. This attenuation of cooperation was reflected in levels of trade and investment. U.S. exports to the EC increased modestly from 12.5 billion in 1974 to \$25.9 billion by the year 2000, while U.S. imports from EC increased to \$26.6 billion (Figures 34 and 35).^{*} Two-way investment also increased only modestly during the period (Figures 36 and 37).

In the wake of U.S. withdrawal from its global commitments, Japan became increasingly isolated. Its defense treaty with the United States was progressively deprived of substance; its trade links with the United States were severely strained by U.S. protectionism as well as the emergence of a strong labor union movement in Japan which also had protectionist instincts; its trade outlets in the European community were also blocked by increased European protectionism. As a result of these serious ruptures in its traditionally close relationships with Europe and the United States, Japan was forced to seek closer links with her immediate neighbors, including the People's Republic of China (PRC), the Soviet Union, Korea, the Philippines, Indonesia, and Vietnam. An immediate benefit was successful negotiations with the Soviets and the PRC leading to large Japanese investments in Siberian raw material resources. Japan also entered into preferential trade agreements with certain LDC's, which provided Japan with preferred access to their raw materials in exchange for technology transfer and special access to the

^{*} 1974 dollars

Japanese market for LDC manufactured products. Japan was also forced to adjust its foreign policy to regional realities and the need to accommodate its former adversaries. This entailed a more neutral foreign policy and a drifting away from its Western allies as well as from Western democratic institutions. This growing distance was reflected in less than historical rates of increase in trade and investment between Japan and the United States (Figures 38-41).

Issues. A predominant issue of international relations was the disposition of world resources. Within developed countries, domestic interest groups were increasingly conscious of the aid and defense drain on shrinking national resources, and all foreign policy objectives were closely scrutinized for what they might ultimately cost the taxpayer. Among the resource-rich LDC's growing revenues stimulated controversy over development priorities and the extent of their foreign aid obligations toward resource-deprived LDC's. Relationships between developed countries and LDC's deteriorated throughout the period as aid levels declined, certain LDC's restricted access to their mineral supplies, developed countries exploited the ocean, and developed countries imposed trade barriers against cheap LDC imports.

As the structure of the formerly bipolar international system collapsed, nuclear technology spread, and Soviet military spending continued to increase, issues of security--both within and between states--preoccupied most governments. This insecurity was particularly acute among countries formally aligned with the United States, and among countries with historical conflicts with regional superpowers--Argentina versus Brazil, Pakistan versus India, Greece versus Turkey, and so on. This general and pervasive sense of insecurity was

reflected in a greater willingness to develop and use nuclear weapons technology, and a general increase in the incidence of brush fire wars. Such occasional low-level conflict erupted within the Mediterranean, Asia, and Latin America. These conflicts were not resolved through normal means of international dispute resolution, since international organizations necessary to adjudicate such disputes had been severely weakened. Many of these conflicts simply played themselves out, frequently with significant loss of human life and property.

Regimes. There was an evolution in developed countries toward greater political activism on the part of various domestic interest groups, and a consequent inflexibility in foreign policy. The consensus on limited foreign policy objectives which was restored during the 1990's was a fragile one, permitting very little room for maneuver, for cooperation with allies, or for effective opposition to the encroachments of adversaries. Thus, generally speaking, regimes were able to pursue only the crudest, most basic objectives in foreign policy--such as territorial defense--devoting most of their attention to balancing resource supply and demand, and avoiding internal conflict.

The major socialist countries continued to be dominated from the center and highly autocratic, but with increased tension among various interest groups--the army, party, intelligentsia, government bureaucracy, managerial elites, and national minorities. The ordering of resource priorities increasingly resembled the conventional politics associated with many democratic societies, though foreign policy making continued to be dominated by an aging elite. Relationships within the Council of Mutual Economic Assistance (CMEA) became increasingly contentious, but the East European countries, with no

alternatives to the Soviet Union for export markets, technology imports, or raw material sources, remained weak and subordinate.

LDC's tended to be dominated by military or ethnic factions dedicated to transforming the international economic system. Many of these countries, lacking sufficient resources to benefit from existing cartels, were continuously frustrated by lagging economic growth. The vast majority of LDC's suffered under increased dependence upon economic exchanges with developed countries, deteriorating terms of trade with the EC and (CMEA) aggravated balance of payments deficits and heightened civil warfare.

Actors. The primary actors in international politics were nation-states. Regional diplomatic coalitions among LDC's never achieved a sufficient consensus to act effectively in international relations, with the exception of resource cartels for bauxite, manganese, tin, and chromium. The effectiveness of the North Atlantic Treaty Organization declined inexorably as U.S. influence waned, while European institutions in economics (EC and CMEA), in defense (the European Defense Community) and in diplomacy were preserved more in form than in substance. The major postwar multilateral institutions which were designed to regulate trade and commerce among the developed countries, such as the General Agreement on Tariffs and Trade (GATT), the International Monetary Fund (IMF), and the Organization for Economic Cooperation and Development (OECD), became less influential, superseded by informal regional cooperation and occasional ad hoc international conferences. Most international organizations remained impotent throughout the period, and new organizations failed to evolve, despite the prominence of new ecological issues which threatened conflict among nations.

Technology. Technological innovation was retarded during the period, and in many countries was confined to new technologies of warfare, which had very few civilian spin-offs. Gradually, as alternate energy technology was developed in the United States and other capitalist countries, the transfer of this technology under concessional terms to certain resource deprived developing countries became a potential source of improved relationships.

The control of the diffusion of military technology became a significant international issue during the late 1980's, as the miniaturization of weapons expanded the power of terrorist and other subnational groups, in turn stimulating greater international efforts to curb terrorism. The reduction of U.S. commitments and the increasingly tenuous nature of European, Japanese, and other countries' security encouraged the spread of nuclear weapons, and by 1990, Pakistan, Turkey, Greece, Israel, South Korean, Brazil, and Australia had all exploded nuclear devices.

Expansive Growth, Scenario B

By the end of the century the United States had strongly reaffirmed its belief in the ability of free enterprise to provide for dynamic growth. Faced with the need to revitalize a troubled economy by the late 1970's, the government turned to the private sector, giving it increasing opportunity to develop with minimal regulatory constraints. Substantially funded R&D allowed a broad range of technology to find solutions to resource problems. With the successful application of technology to social needs came a dramatic re-awakening of the "American Spirit." As the private sector showed its ability to identify and respond to national goals, the public sector--government--reduced its relative size and propensity to intervene and control. With high emphasis on individualism and corporate achievement, the economy expanded rapidly.

OVERVIEW

The United States stepped into the twenty-first century with unbounded vitality. The last quarter of the century had produced a large, wealthy, vigorous society. Technology had successfully met the challenge of resource availability, and by the early 1980's several technologies had been developed that promised to put an end to energy and material supply problems. Growth in domestic availability of fossil-fuel resources was accomplished through the full exploitation of economically and environmentally acceptable sources. Expansion of coal and nuclear power for electricity, coal gasification, development of geothermal energy, and the development of solar energy (particularly for space heating and air conditioning) contributed to satisfying the expanding demand for energy. Freedom from resource constraints encouraged a renaissance in the nation's pioneering and developmental spirit. This produced solutions that permitted continuation of life in the United

States without serious change in the country's historic value structure and patterns of economic growth. Lifestyle patterns that had been developing at mid-century were able to continue. The movement of people to the suburbs, which had characterized the earlier part of the century, resulted in successful establishment of suburban/urban corridors linking the spreading population--particularly in the Southwest, Southeast, and West Coast regions.

Among the most important features of the early 1980's was the reduction of the government's involvement in the affairs of private business. The Federal Government, through subsidized research and development, provided the stimulus for technological growth. At the same time, private capital was given relatively free rein to promote commercialization. The marketplace was able to function unfettered by regulatory controls. Available resources restored the country's expansionist impulses, and the growing national wealth was accelerated by strengthening of the private sector.

In the area of foreign affairs, the bipolarity which had characterized international relations in the 1950's and 1960's had been re-established in the early 1980's. Once again world affairs were dominated by the ascendant position of the two major super powers, the United States and the Soviet Union. Other countries in Europe and the Far East were preoccupied largely with avoiding complete subservience to these major powers. While the two were clearly dominant in terms of strategic capabilities, the middle range powers in Europe, Asia, and Latin America maintained sufficient leverage to avoid integration within NATO and the Warsaw Pact, and were occasionally able to influence events outside their regions. However, cohesive regional centers of influence did not develop, and regional politics exhibited frequent instability, which threatened conflict and which were usually resolved through joint U.S.-Soviet imposition of peaceful solutions.

Laissez-faire policies had resulted in very high GNP growth, and the level of affluence attained produced a national sense of pride and good will. The reaffirmation of the free enterprise system brought with it a like reaffirmation of the individualism that had been the hallmark of the American character. With restoration of energy as a reliable and growing commodity, there seemed to be no limits to national growth.

SOCIOECONOMIC CONDITIONS IN THE UNITED STATES

Demography. The technological advances that resolved the resource availability problems also stimulated economic growth and created a forward-looking national pride. Both the optimism of the economic outlook and the national mood of vitality stimulated family formation and birth rate. In 1985 the population reached 241 million and by the year 2000 it exceeded 287 million (Figure 1).^{*} The fertility rate rose to a level of about 2.7 births per woman of childbearing age. The marriage rate stayed close to the 1975 level of 10 per 1000 population. First marriages grew faster than the divorce rate as a result of economically secure family life and the high feelings of identity with the local community.

The tendency toward decentralization continued to increase the suburban sprawl. With the availability of fuel, the private automobile remained the prime means of travel in the low-density areas surrounding the nuclear cities. The cities themselves were transformed into consolidated centers of commerce, accessible by individual electric vehicles and limited urban transit. Commercial functions, however, also were dispersed through the lower-density suburbs, as was most industry, thereby relieving pressure on city facilities.

^{*} All figures are found together following the scenario narratives.

The suburban/urban growth patterns led to the identity of several continuous corridors that functioned as megalopoli. The large corridors included the East Corridor from Boston to Richmond, the Great Lakes Corridor from Buffalo to Milwaukee, the West Corridor from San Francisco to San Diego, and the Texas Corridor including Dallas, Houston, and San Antonio. Some of the other corridors included Seattle-Portland, New York-Albany, Philadelphia-Harrisburg-Pittsburgh, and a Florida corridor that ran from Jacksonville to Miami.

The ability of the population to expand geographically gave impetus to industrial decentralization. Efficient transportation systems provided easy access for the small, low-density community. As a result, urbanization growth rates were held to historic levels. But the South and West* continued to gain urban population faster than the rest of the country. By 2000, 88 percent of the population in the combined South and West lived in urban areas, compared with 81 percent for the Northeast* and North Central Divisions.* This compared to 71 and 76 percentages, respectively, in 1970 (Figures 4 and 5). The South and West did gain in population through migration, stimulated largely by continued movement into open geographic areas. By 2000, over 56 percent of the U.S. population lived in the combined South and West, an increase from 49 percent in 1975 (Figure 3).

*Four primary census regions are referred to: (1) the South, consisting of the South Atlantic, East South Central, and West South Central states; (2) the West, consisting of the Mountain and the Pacific states; (3) the Northeast, consisting of New England and the Middle Atlantic states; and (4) the North Central Division, consisting of the East North Central and the West North Central states. The South and West contained 48 percent of the total U.S. population in 1970.

Economic conditions. The ability to resolve conflicts between resource supplies and demand through technological advances stimulated economic growth in important ways. While the Federal Government subsidized research and development, it gave relatively free rein to industrial expansion. By 2000 all R&D spending had doubled over the 1975 level, rising from 2.5 percent of GNP to 5 percent. Free market forces provided for a fair distribution of goods and services. The need for governmental intervention was further reduced by the availability of energy and raw materials.

GNP grew rapidly, and by the 1990's was increasing at a rate greater than 5 percent per year (Figure 6). In 1985 GNP totaled \$2410 billion and by the year 2000 rose to \$5050 billion*. Disposable personal income accelerated at rates parallel to GNP growth, and DPI per capita increased rapidly, from \$5040 in 1975 to about \$6750 in 1985 and to about \$12,000 in the year 2000 (Figure 8). GNP per capita jumped from \$7100 in 1975 to \$17,600 in 2000 (Figure 2). Personal consumption expenditures, which were \$973 billion in 1975, rose to about \$1465 in 1985 and to about \$3080 billion by 2000 (Figure 9).

The recovery from the mid-1970's recession was rapid, after some initial slowdown in 1976. The rapid growth experienced in the late 1970's and early 1980's was taken as evidence that the market system was working well. Critics of private business were increasingly silenced as the vast majority of citizens benefited from the surge in economic growth. In the early 1980's the Federal Government began to seriously assess its relative position in the economy. Since the major portion of the initial growth was

*All dollar figures are in constant 1975 dollars.

supported by initiative of private industry, the Federal Government made a conscious policy decision to provide industry with the means needed to sustain the substantial growth which had been established. Though Federal spending necessarily increased with economic growth, the relative predominance of private industry in shaping this phenomenal growth was quite marked. In this period all government spending rose from 35 percent of GNP in 1975 to 46 percent of GNP in 2000 (Figure 15). While there was still this significant government role in the economy, private business grasped the initiative and was the driving force behind the expansion.

The index of industrial production (Figure 10) rose rapidly, averaging 5.3 percent annually. Industry as a whole continued the historical trends of shifting to a service-oriented economy. This, of course, did not mean that output of goods was small. In fact, by the end of the century the percent of GNP accounted for by final sales of goods was 34 percent or \$1720 billion compared with approximately 44.7 percent of GNP, or \$711 billion in 1976 (see Figure 17). This spurt in production was supported by increases in productivity and capital spending. Productivity (output per man-hour of all persons) grew 4.6 percent annually for the two decades prior to the end of the century (Figure 11).

Capital spending (expenditures on new plant and equipment) was boosted by a number of governmental measures, and grew at the unprecedented rate of 5.3 percent per year (Figure 12). Two initial measures instituted by Federal legislation to stimulate capital generation were a 50 percent reduction in the corporate income tax rate and a 50 percent decrease in the capital gains tax. These measures, one aiding internal funds generation, and the other boosting private investor initiatives, seemed to personify the

transition from governmental to private dominance of the economy. This trend continued as further legislation provided the private business sector with accelerated depreciation allowances. As the century drew to a close, dividend payments by corporations were made tax-free. Due to the health of the banking industry, and in order to further facilitate growth, reserve requirements on time and saving deposits were abolished.

While these measures, which were designed to aid business and investors, proved to be remarkably successful, the Federal Government went one step further. In 1990 the Federal Reserve System announced that it would henceforth adopt a policy of attempting to achieve constant growth in the monetary aggregates. The growth rate was set at 8 percent for M_1 (currency and demand deposits). This "hands-off" monetarist position implied that the Federal Reserve would be responsive to the desires and requirements of private industry. In concern with this, the Executive Office announced a policy by which it would consciously attempt to balance the Federal Budget. These two measures, more than any other events, typified the rather startling transformation to an economy prosperous and striving under the leadership of private industry.

The capital markets functioned well, supporting a balanced supply and demand for funds. The AAA corporate bond rate was somewhat high (8 percent) by previous historical standards, but it reflected the healthy interaction of market forces (Figure 13). Inflation remained in the 4-6 percent range over the last two decades of the century. As the capital markets boomed, industry took advantage of the opportunities of floating bond and large equity issues. Industry's reliance on external funds increased and the percent of investment funds generated internally fell to 37 percent in 2000 (Figure 14).

Due in large part to growing investor and industry confidence, the business sector relied somewhat less on short-term credit, preferring long-term financing, which grew at a rate of almost 7 percent annually (see Figure 16). At the turn of the century, a majority of states had left the Social Security system in favor of private pension plans. This switch, of course, injected substantial amounts of funds into the capital markets, as these pension funds were invested and provided another significant source of capital.

By the end of the century the economy was remarkably prosperous, and the character of this transition had been quite different than one might have predicted in the mid-to-late 1970's. The reversal of the relative predominance of government in the economy in favor of private industry seemed to personify the faith in private enterprise as the country began the twenty-first century.

Energy and materials. Technology succeeded in expanding all sources of fuel, and by the late 1980's market forces were allowed to regulate demand without government intervention. By 2000 the prices of all energy products were totally deregulated without causing unacceptable price increases. The average price to all sectors for electricity, generated largely from coal and nuclear power, rose from 2.72 cents per kilowatt-hour in 1975 to 4.06 at the end of the century (Figure 13).

The expansion of domestic sources of energy served to limit dependence on foreign oil. But, despite significant shifts away from oil, the expanding economy still exerted a high demand for petroleum. Imported oil continued to compete with domestic oil, and the ratio of domestic production to domestic demand dropped from about 0.60 in 1975 to 0.52 by 1990, and to 0.34 in 2000

(Figure 19). The threat of expanding domestic oil production at higher prices, however, successfully limited foreign price escalations.

While energy resources expanded, substantial increases in total energy usage efficiency and energy delivery were being made. By the turn of the century the first agro-industrial complex had been constructed. It consisted of a central nuclear power plant which generated electricity, supplied waste heat for aquaculture, and provided a portion of its energy for production of fertilizer. Production of synthetic gas from coal for the existing pipeline system proved to be cheaper than creating new distribution systems for coal or electricity. On the East Coast, refineries and offshore terminals were established to provide a capacity equal to a major fraction of that area's demand for oil products. Oil was shifted away from the ground transportation sector through the use of non-petroleum sources of primary power. By 2000 nearly 15 percent of the transportation demand for energy was being satisfied by the use of storage batteries, fuel cells, electromagnetic propulsion, and flywheels.

The tendency toward decentralization aided in reducing local environmental impacts. In some cases production centers were developed near natural resources to minimize raw material transportation costs. Vigorous exploitation of domestic raw material resources, however, was accomplished without environmental degradation, as necessary environmental costs could be supported by the economy.

Human resources and lifestyle. Rapidly advancing technology made it necessary for many workers to undergo job retraining. Technological change brought with it great opportunities for career changes. Each area of the country was in competition for labor, and many people moved frequently

in order to maximize their opportunities. By the 1980's, unemployment dropped to about 6 percent, where it remained through the century.

The fast growing economy accelerated the movement of women into the labor force. Total labor participation rates rose steadily from the 1975 value of 0.61 to 0.67 by 2000 (Figure 23). With the high growth of the population, the total labor force reached 138 million people at the end of the century (Figure 24). High productivity allowed a progressive decline in the work week, and by 2000 the average number of hours worked weekly had dropped from the 1975 value of 36 hours to 30 hours (Figure 22).

Family life continued to center about the home, with a high value placed on individual home ownership. People tended to be oriented toward community as trends toward population dispersion increased the possibility for participation in local affairs. And movement toward local autonomy was restored. While the larger cities provided the focus for major cultural activities, recreational pursuits were primarily satisfied in the easily-accessible, low-density suburbs. Personal consumption expenditures for recreation tripled over the 1975 value and reached \$218 billion in the year 2000 (Figure 27).

By the end of the century the United States showed little anxiety about population growth. Mid-century concern about overpopulation seemed somewhat archaic. The traditionally vigorous youth-oriented outlook of the United States was accompanied by a feeling of self-reliance and of unlimited opportunities for economic growth. Through the advancement of technology, society was able to satisfy its needs and to develop in an almost uninhibited fashion. Population density was held down by patterns of decentralization, and people

were able to maintain a high degree of community identity. All modes of transportation were relatively accessible and provided efficient service. Personal consumption expenditures for transportation increased from \$126 billion in 1975 to \$400 billion by the close of the century (Figure 26).

In some respects the United States, at the close of the twentieth century, resembled the United States at the close of the nineteenth century. Inventiveness had produced the necessary technology to harmonize resource demands with both domestic and foreign supplies, and provided production processes which did not permanently harm the environment. Economic aggressiveness, accompanied by increasing population dispersion, returned to the American character a feeling of "individualism," which had characterized much of the nineteenth century.

Decentralization gave emphasis to the ethic of individual responsibility both for one's self and for the well-being of one's local community. America deservedly felt that it had engaged two of her primary problems--raw materials and energy scarcities--and had secured a solution which would allow continued growth. And it also believed that other problems could be solved with similar applications of determination, ingenuity, and capital--the challenges of the twenty-first century.

INTERNATIONAL CONDITIONS

The U.S. role in the world. The United States maintained an active role in global politics. It projected its influence into all regions of the world and dominated market economy trade and financial patterns and institutions. It was a principal market for exports of less developed countries (LDC's) and an important source of LDC technology and manufacturer goods imports. U.S. foreign policy orientation was European centered, with its basic objectives remaining the defense of Europe from Soviet pressure. The United States sought greater influence over internal European developments in order to protect its trade and investment interests in the European Community (EC). The United States successfully opposed any movement towards genuine European integration, since this was perceived as a threat to United States access to European markets and might enhance the autonomous power of the EC. U.S. policy toward LDC's was largely reactive, designed to maintain favorable terms of trade, suppress any challenges to the international economic order, and resolve any disputes among less developed countries which threatened to escalate and involve the super powers.

U.S. strategic capabilities continued to grow throughout the period as did its ability to influence events in peripheral areas. This strategic superiority, soundly based on a growing economy and the continued European and Japanese fear of Soviet penetration, combined to preserve U.S. influence in major areas of the world. Resentment to this imperial role, however, was frequently expressed, sometimes rhetorically within international organizations, often concretely in diplomatic opposition to the growing U.S. military presence in the Mediterranean and the Far East.

The relationship of the United States with the Soviet Union increasingly reflected the shared interest between the two in suppressing LDC's and middle range power challenges to the bipolar international system. This common interest in the status quo resulted in U.S. and Soviet agreement to maintain the division of Europe through enforcement of the protocols negotiated at the Conference on European Security and Cooperation concluded in 1976. Common U.S.-Soviet interest was seen in their joint hostility towards uniquely European institutions--the EC, the European Parliament, and so on--and a preference for international organizations which the two super powers clearly dominated. There were also joint U.S.-Soviet efforts to reach disarmament agreements which would deprive the United Kingdom and France of their independent nuclear forces, and an explicit U.S. recognition of Soviet hegemony over Eastern Europe.

U.S.-Soviet policies towards the LDC's were also parallel, although not actually coordinated, in that both nations sought to limit the transfer of military technology to less developed countries, both opposed any basic changes in terms of raw material trade, and both intervened, sometimes jointly, to prevent destabilizing conflict. The United States and the Soviet Union also were successful in negotiating denuclearized zones in Latin America and South Asia. The major source of tension between the United States and the Soviet Union continued to be their respective positions in the Middle East and Africa, where their interests had not congealed, and there was continued competition for influence with powerful regional states and revolutionary groups.

U.S.-Soviet economic exchanges expanded as did cooperation in outer space and the deep seabed. U.S. domestic hostility to Soviet authoritarianism faded as the desire to expand U.S. export markets among Eastern Europe and the Soviet Union overwhelmed any ideological opposition to closer links with totalitarian regimes.

Strategically, a rough balance between the two superpowers was maintained, with new weapons systems limited by further agreements on biological and other exotic forms of warfare. Nuclear tests continued to be banned in the atmosphere and were also prevented below ground, but the inability to draw the People's Republic of China (PRC) into these agreements limited substantial progress towards disarmament.

U.S. relationships with less developed countries were extremely contentious, as LDC's resentment developed over unfavorable terms of trade with the United States. It was further exacerbated by the U.S. refusal to adhere to international constraints on seabed mining and the growing role of U.S. multinational companies (MNC's) in LDC economies. U.S. aid commitments failed to keep up with its GNP growth, and food donations and concessional sales declined relative to commercial exports. However, LDC resentment had only mild repercussions for the position of the United States. The cohesion of resource cartels dissipated as new extractive technologies expanded minerals production in the United States. The potential for expanding domestic petroleum supplies and increasing the usage of alternate fuels put pressure on the OPEC cartel and resulted in a division within OPEC between Saudi Arabia, Indonesia, and the Persian gulf states on the one hand, and the radical Arab states and Iran on the other. The effect of this split was increased price stability in world crude oil markets, as OPEC prices rose to only \$12.68 by the year 2000 (Figure 46).

Despite the relative U.S. invulnerability to resource cartels and predatory pricing, the growing split between the United States and most developing countries did impose certain penalties on the United States. Erratic economic growth in the LDC's, internal turmoil, and resentment against neocolonialism assured continued animosity toward the United States. Latin American governments instituted more stringent controls over the policies and practices of multinational companies within their countries. U.S.-LDC disputes on such issues as food, aid and trade, technology transfer, and lack of favorable tariff treatment in the United States, deprived international organizations of any utility for U.S. diplomacy, as the United Nations increasingly became an arena for mobilizing anti-U.S. automatic majorities.

Constant denunciations of U.S. exploitation also complicated the efforts of allies to maintain domestic political support for policies favorable to the United States. Furthermore, the conservative orientation of U.S. foreign policy toward LDC's and its consistent opposition to revolutionary regimes and groups, deprived the United States of influence over important political movements and invited its global adversaries to establish themselves as champions of liberation.

U.S. relationships with the EC were characterized by Europe's strategic subordination to the United States. Europe achieved neither the political consensus necessary for an independent foreign policy, nor the coordination of national economies needed for enhanced strategic capabilities. Lacking the means for a genuinely independent role in international relations and continuing to fear Soviet power--which was increasing throughout the period

--Europe had no choice but to rely upon the U.S. defense commitment and the presence of U.S. troops. This enforced intimacy was expressed in increased levels of trade and investment flows. U.S. exports to the EC rose to slightly over \$30 billion by the year 2000, while U.S. imports from the EC increased to \$30.2 billion by the year 2000 (Figures 34 and 35).^{*} Two-way investment more than tripled between 1974 and 2000 (Figures 36 and 37).

While U.S. influence over Europe remained dominant, France and West Germany grew restive at the constraints imposed on their global influence. European-wide resentment developed at the aggressiveness with which the United States imposed its own views of legitimate trade and monetary arrangements. There were repeated disagreements on the extent of Europe's obligation to support U.S. policy toward the Soviets, the PRC, and the LDC's.

There were frequent trade and monetary disagreements over such issues as the European common agricultural policy, the value added tax, the extent of legitimate government intervention in currency markets, and so on. The usual U.S. response involved dire warnings to reassess its commitments to Europe without greater European support for U.S. global objectives.

The U.S. relationship with Japan was also somewhat strained throughout the period. U.S. demands for greater Japanese conformance with U.S. foreign policy objectives and for elimination of trade and investment restrictions collided with the delicate balance of domestic political forces within Japan. Thus, Japanese governments found themselves repeatedly jeopardizing domestic tranquility in order to lend the United

^{*}1974 dollars

States diplomatic support, and this generated continuous tension with the United States. The mutual security treaty continued to be the basis for Japanese national security policy, albeit with increasing Japanese domestic political opposition. Trade and financial ties remained intimate, with two-way trade and U.S. investments in Japan more than tripling between 1974 and 2000 (Figures 38 through 40).

This enforced cooperation with the United States limited Japan's flexibility in dealing with new regional realities, including the growing power of the PRC, Vietnam, Korea and Indonesia. This inflexibility became increasingly intolerable, and towards the end of the 1990's Japan launched a series of initiatives designed to substantially improve its economic ties with the PRC and the Soviet Union. In particular, Japan made substantial investments in the raw material resources of both countries.

Issues. The prevailing issues of international relations centered on the security requirements of the two superpowers. For the Soviets this meant an increased preoccupation with the growing power of the PRC and with the independent aspirations of such allies as Romania and Poland. The United States was also preoccupied with retaining its predominance within Europe and containing the frequently anti-U.S. impulses of France and increasingly, West Germany. Both superpowers were concerned with the raising ambitions of certain large less developed countries equipped with sophisticated technologies of warfare.

The issues which concerned middle range powers were the retention of security guarantees from the superpowers while at the same time expanding their diplomatic flexibility and preventing superpower influence within

their own domestic economies and political systems. They were only partially successful in these efforts, in that they were able to avoid complete subordination to the superpowers but proved incapable of sustained influence over events outside their region.

The prevailing issues among LDC's focused on economic expansion and transformation of the international economic system to limit the power of multinational companies. They sought to improve their trading posture and to increase their export earnings. They were successful in those areas over which they exercised internal control, as, for example, limiting the influence of multinational companies within their economies. However, in those matters which depended upon actions of developed country governments, they were unsuccessful. This included their inability to alter the terms of raw material trade, to convince developed countries to provide tariff preferences for their exports, or to stabilize and improve their export earnings.

Regimes. Regimes among developed, democratic countries tended to be conservative throughout the period. Generally their governments were reluctant to intervene in the economy, preferring to allow the forces of the market place rule. This was especially true of the United States and West Germany, and somewhat less true of France, the United Kingdom, and Japan, where governments were more active in promoting redistribution of wealth. A relative lack of interest group participation in the foreign policy process however, conferred greater flexibility and discretion to the government in the formulation and implementation of diplomacy and strategy. This especially benefited the United States, which enjoyed sufficiently high GNP growth, low unemployment, and social stability to remove representatives of

labor, the urban poor, and other interest groups from previously important roles in the policy process. The major exception to this pattern was the influence of large industry, which lobbied successfully for vigorous defence of U.S. free trade and investment interests, and expressed strong opposition to commodity price stabilization measures with less developed countries.

The centrally planned economies suffered continuous pressure from managerial elites for more rational economic policies and structures, from consumers for improved and expanded goods, and from farmers for higher farm prices. The maintenance of authority within the socialist countries became a nearly all-consuming objective. This was rendered particularly difficult by the economic necessity for increased trade and investment with Western market economies. For the Soviet Union these tensions had direct consequences for foreign policy. They imposed constraints on defense spending which, in turn, impeded Soviet global aspirations and required a greater degree of accommodation with the United States.

Relationships within the Council of Mutual Economic Assistance were also contentious as Eastern European countries were drawn towards closer economic and social ties with an economically dynamic Western Europe. This restiveness occasionally exploded into antigovernment--and by extension anti-Soviet--riots, and forced continuous efforts by East European regimes to appease their volatile populations. This unrest, in turn, required the Soviets to accept U.S. dominance in Western Europe in order to achieve greater discretion for the use of force in Eastern Europe.

LDC regimes, primarily autocratic, were revolutionary in outlook. They were frustrated with consistently adverse terms of trade with

developed countries and were preoccupied with the process of nation-building and integration of diverse ethnic groups. Although their economic growth accelerated in the 1980's and 1990's--Latin American GNP, for example, achieved a level of \$740 billion by the year 2000 (Figure 33)--their economies were highly vulnerable to sudden declines in revenues because their raw material export prices continued to exhibit high volatility. A substantial proportion of their growth depended on the presence of foreign companies. This caused continued tension with developed countries as efforts were made to control the production and export policies of these multinational companies.

A growing number of LDC's enjoyed sufficient economic growth to join the ranks of the developed--Brazil, Venezuela, and Nigeria were examples. This increased growth from certain LDC's enlarged intra-regional differences, as the remaining low growth LDC's became increasingly revolutionized. This latter group formed a solid block of enormous size, dominating and polarizing international organizations. Their internal strife threatened repeatedly to spill over into neighboring states, raised the danger of escalation to regional or even global levels, and repeatedly tested the durability of U.S.-Soviet detente.

Actors. Actors were primarily nation-states, but with blocks--the EC plus the United States, Japan plus the United States, the Warsaw Pact, the Group of 77 (a loose coalition of LDC's) playing an important role in international relations. Such coalitions as NATO, the Warsaw Pact, and SEATO played important roles in global and regional collective security. Various regional economic organizations, such as the Organization of Economic Cooperation and Development, the International Energy Agency,

and a weakened EC also functioned to regulate economic exchanges within and between regions. The Warsaw Pact was an important force in facilitating Soviet control over its allies and in enhancing Soviet global power. Certain organizations with largely LDC membership, such as the Group of 77, the Organization of African Unity, and the Latin American Free Trade Association, also exercised a certain influence within their particular domains. Multilateral, functional organizations, such as the General Agreements in Tariffs and Trade and the International Monetary Fund, were increasingly important as promoters of free trade and investment, and thus increasingly important instruments for the imposition of U.S. foreign economic policy objectives on its allies. International organizations such as the UN and its various specialized agencies were polarized by developed country-less developed country disputes and, therefore, largely impotent, and new international organizations did not emerge in response to new global ecological threats.

Non-nation-state actors also influenced international relations. Multi-national companies of growing size, number, and sophistication enjoyed increased leverage in the formulation of developed country international economic policy. Terrorist groups, usually consisting of ethnic, racial, or political minorities in LDC's and developed countries, continuously disrupted international commerce and transport, but were incapable of altering the diplomatic interests of various governments.

Technology. Technological innovation within most developed countries of the world was rapid, with some important military consequences. Weapons systems evolved rapidly, causing uncertainty between the United

States and the Soviet Union concerning the stability of strategic deterrence. There were constant changes in military strategy in response to these new technologies, and a resultant effort to limit military R&D spending. The fear of militarization of space led to more rigid multilateral agreements to ban all weapons from the outer space. Developments in computer and communications technology facilitated communication during crises and the management of conflict and reduced the possibilities of inadvertent warfare.

The rapid diffusion of potentially strategic technologies (e.g., uranium reprocessing and enrichment facilities, biological technologies, etc.) among developed countries and certain less developed countries had important consequences for U.S.-Soviet relations. The transfer of these technologies to such ambitious LDC's as Taiwan, South Korea, Israel, India, Pakistan, Venezuela, and Brazil created a common U.S.-Soviet interest in strengthening both multilateral and bilateral efforts to limit the spread of strategic technologies. However, these efforts were mostly unavailing as the LDC's demanded massive aid as compensation for their agreement to abstain from the purchase and use of these technologies. Furthermore, efforts to curb private company-LDC technology transfers were not taken for fear of disturbing market forces and offending domestically influential multinational companies.

Individual Affluence, Scenario C

By the end of the twentieth century the pessimism of the late 1960's and early 1970's had vanished. Concerns about the economic stability of the nation were largely a thing of the past. Although individuals and corporations prospered, it was largely government moves in the 1980's which had set the tenor for the country's economic stability. Effective government programs encompassing energy and other resources finally took hold, and the government was even influential in shaping population growth trends and where people lived and worked. Of course, technology played an important role in satisfying energy and other resource needs, and in achieving desired environmental conditions. Here, the government played an important role in stimulating the development and exploitation of those technologies by the private sector. Indeed, other nations viewed the United States as a country that had "got it all together."

OVERVIEW

The American society reached the twenty-first century in a state of affluence. Through effective planning the government was able to stimulate adequate development of domestic raw material resources. Technological advances in energy supply, which had been set in motion in the late 1970's and early 1980's, relieved shortages and the anxieties they had created. The economical development of coal gasification, together with applications of geothermal energy and solar energy, particularly for space heating, helped remove pressure on oil sources.

The Federal Government promoted zero population growth based on the premise that a stabilized population was necessary if the benefits of the American dream were to be realized for all its people. Both GNP per capita and disposable personal income per capita took up patterns of increase which continued throughout the remainder of the century. Available energy supplies

and a healthy economy permitted the continued growth of capital and energy-intensive industries. An ever larger burden of industrial needs were being met by automation. Conditions of affluence permitted people to find an increasing degree of self-expression through avocational interests in leisure and cultural pursuits.

Nuclear cities were the focus of both commercial and cultural activities. Decline in population growth made it easier to restore the vitality of urban life. Recognition of the interdependence of cities with the surrounding suburbs made it possible to raise the necessary taxes to provide for adequate public services.

The affluence in individual lifestyles was seen to be the successful result of centralized governmental planning. Regulation of the behavior of key industries was used to assure equitable distribution of goods at environmentally and economically acceptable costs. Regulation was not theoretical and impractical--but realistic and acceptable to the private sector. Where technological advances relaxed pressures on prices, market forces were allowed to operate rather freely. As affluence increased, certain governmental services were transferred to the private sector with governmental regulation. Thus, while government had a large presence, people's satisfaction made its control over the social process both tolerable and desirable.

The United States continued to play a strong leadership role in international politics. Both the United States and the Soviet Union enjoyed a preponderance of military capabilities. However there was a substantial degree of regional autonomy within Europe, the Far East, and Latin America, with influence exercised by coalitions of regionally proximate states and international organizations. The United States and the Soviet Union

cooperated in efforts to avoid nuclear conflict, but competed for diplomatic influence in Europe and among less developed countries (LDC's). The two superpowers did not, however, develop a sufficient coincidence of interest to dominate all spheres of international activity, and certain functional issues, such as law of the sea, nonproliferation of nuclear weapons, technology transfer, and international trade regulation, were adjudicated by groups of states and international institutions. International organizations continued to be dominated by LDC's, but these organizations became progressively less polarized as developed countries, led by the United States, became more responsive to LDC aid and trade interests. Limited conflicts occasionally erupted in Africa and Asia, but were resolved by regional coalitions of states, rather than by U.S.-Soviet joint intervention. Economic power and influence over international trade and financial flows and institutions were widely shared among both the superpowers and the middle range powers of Europe, Asia, and Latin America.

The high levels of affluence in the United States underscored its ability to solve resource problems, and the country appeared to others as a model for success. A strong centrally directed government had led to an individually rewarding society, secure in its relations with the rest of the world.

SOCIOECONOMIC CONDITIONS IN THE UNITED STATES

Demography. In a society that emphasized the "good things in life," population control was seen as a key factor. Efforts to restrict birth rate held the population to about 228 million by 1985 and to 245 million by the end of the century (Figure 1).^{*} The birth rate averaged 1.7 live births per woman of childbearing years.

^{*}All figures are found together following the scenario narratives.

Public policy on population control resulted in changing attitudes toward marriage. Emphasis on individual achievement and self-expression tended to delay marriage and also resulted in more mature and stable relationships. By the end of the century, the total marriage rate had dropped from the 1970's high of 10 per 1000 population to 8 per 1000. Though first marriages declined somewhat, the decrease in the total marriage rate was in large measure due to the drop in the divorce rate which occurred at higher educational levels, and economic security which contributed to stable relationships.

The threat of decay and economic difficulty which the core cities increasingly faced in the 1960's and 1970's was removed through a successful policy of apportioning both Federal and state aid to cities. This aid was justified in part on their daytime population increases, which served as a measure of importance of the city to the surrounding community. This policy encouraged suburbs to yield to annexation pressures from the cities. For the administration and development of specific functions (e.g., urban transportation), metro governments often were formed that had the power to levy taxes on both income and property in their areas. The metro governments ameliorated the burden of the central city by allocating support for certain vital urban functions to the surrounding suburbs. Compliance with the national values for the environment and assurance of a geographically-balanced economy was aided by the passage in 1990 of a national land use bill requiring the states to develop Federally-approved zoning plans. Further, Federal guidelines were developed to serve as a voluntary framework for planning population distribution among the states.

For large cities revenues were augmented by a municipal tax on income, collected from those who lived in the suburbs but worked in the city, and by

taxes on fares and on private vehicular parking, for those who traveled between the city and surrounding suburbs. The taxes provided motivation for people to relocate in the higher density areas of the urban centers, where cultural opportunity and services existed. These measures tended to control some of the suburban sprawl.

Stabilization of the population growth did not alter the rate of urbanization of the population. The South and West continued to have the largest urban growth rates. By the close of the century, the urban population for these 2 regions was 93 percent of their combined population. In the Northeast and North Central divisions* 85 percent of the combined population lived in urban areas. This was a marked change from earlier years, as in 1970. These percentages were 71 and 76, respectively (Figures 4 and 5). In fact, net migration gains gave the South and West nearly 57 percent of the national population by 2000, compared to 49 percent in 1975 (Figure 3).

The suburbs which surrounded the central city tended to develop into tight rings. Within this pattern which slowed the suburban sprawl, three major population corridors continued to develop. These ran from Boston to Richmond, from Buffalo to Milwaukee, and from San Francisco to San Diego. With continuing limitation on population growth, however, the nuclear city became once more the fundamental demographic unit.

Economic conditions. The frustration during the mid-1970's over the inability to solve simultaneous inflation and recession was attributed in

*Four primary census regions are referred to: (1) the South, consisting of the South Atlantic, East South Central, and West South Central states; (2) the West, consisting of the Mountain and the Pacific states; (3) the Northeast, consisting of New England and the Middle Atlantic states; and (4) the North Central Division, consisting of the East North Central and West North Central states. The South and West contained 48 percent of the total U.S. population in 1970.

part to the lack of adequate planning and to ineffective policy formation and execution on the part of the Federal Government. The government of the late 1970's sought to remedy this situation by moving toward a centrally-directed economy.

GNP grew rapidly with the advent of new technological developments that solved material supply problems. GNP, which in 1975 totaled \$1520 billion, climbed to \$4900 billion by the close of the century (see Figure 6).^{*} Between 1985 and 2000 the average annual growth rate was nearly 4.9 percent.

Low population growth, coupled with high economic growth meant greater individual benefits. Disposable personal income per capita and GNP per capita showed strong growth. DPI per capita rose from \$5040 in 1975 to \$13,600 in 2000, while GNP per capita climbed from \$7100 in 1975 to \$20,000 in 2000 (Figures 7 and 8). Personal consumption expenditures also reflected the growth in wealth. In 1975 personal consumption expenditures for the nation totaled \$973 billion, and by the end of the century had increased to \$2980 billion (Figure 9).

The Federal Government, while maintaining rather close control over certain key industries, also provided specific stimuli which greatly enhanced the productive power of the private sector. In the areas of transportation, communication, and housing the Federal Government played an active role in securing necessary infrastructure by construction loan guarantees.

Nuclear cities were the focus of both commercial and cultural activities, as the decline in population growth made it easier to restore the vitality of urban life. Recognition of the interdependence of city and surrounding

^{*}All dollar figures are in constant 1975 dollars.

suburbs made it possible to raise the necessary taxes to provide for adequate public services. Here, also, the presence of the Federal Government was felt in the form of Federally-guaranteed municipal bonds.

The index of industrial production grew rapidly, averaging 5.3 percent annually over the last two decades of the century. Coupled with this growth was the continued trend to a service-oriented economy. By 2000 goods production accounted for only 35 percent of output, down from 45 percent in 1976 (Figure 17). The rapid pace of technological advance plus increasing capital intensity supported large increases in productivity, which averaged 4.4 percent annually (Figure 11).

The affluence in individual lifestyles was seen to be the successful result of directed planning on the part of the government. The Federal Government took several specific measures to aid industry in obtaining needed capital. All dividend payments by corporations to private investors were made tax-free. This step was especially notable since Federal authorities turned to free market forces by removing the tax on dividends rather than employing direct fiscal measures to aid industry. In a later but similar move, accelerated depreciation allowances were legislated to spur internal generation of investment funds by industry. As a result of these moves and the growing economy, capital spending on new plants and equipment grew at an average of about 5 percent annually from 1980 to 2000 (Figure 12). As a result of this large infusion of capital many industrial production activities became automated and increasingly relied on sophisticated computer technology. The Federal Government played a major role in these developments through substantial R&D funding.

Government-supported R&D, however, was not the only or the most important influence in the macroeconomic picture. Legislation was enacted which specified a direct governmental responsibility in maintaining full employment. Economic historians wryly noted that it was like the Full Employment Act of 1946, only this one had teeth. In order to ease the transition to full employment and to help the chronic unemployables, legislation was passed guaranteeing a minimum annual income. In addition, due to the rapidly changing skill requirements of the economy the government subsidized large-scale retraining programs to insure the necessary labor force mix.

Steps taken by the Federal Government in promoting capital spending also had their influence on the capital markets. The AAA corporate bond rate hovered around 7.5 percent for the last 2 decades of the century (Figure 13). This rate reflected two forces: one was the large demand for funds and the other was a persistent policy effort by the Federal Reserve to insure that interest rates would not rise to high, unacceptable levels. The historical trend toward greater reliance by business on external credit funds continued with the amount of internally-financed investment funds accounting for 38 percent of all investment by the end of the century (Figure 14). Due to vitality of the equity and bond markets there was a small shift away from short-term credit in favor of longer-term arrangements.

The Federal Reserve was successful in holding interest rates at acceptable levels and, along with the U.S. Treasury, it managed to hold inflation in the 4-5 percent range for the entire post-1980 period. This performance was remarkable when viewed in terms of the growth in both government and private activity that was achieved without significant inflationary problems. This achievement, more than any other, characterized the success of the newly forged, centrally-directed U.S. economy.

Energy and materials. New energy resources and advanced engineering techniques were developed for substituting a wide range of industrial materials which were in short supply. Reduction in generation of wastes, increased energy efficiencies, and techniques to make possible the economical use of recycled materials all made important contributions. Gasification of coal permitted continuing use of the gas pipeline delivery system. Expanded use of coal, increased use of refuse for environmentally acceptable electrical generation, use of geothermal energy and solar energy for space heating and air conditioning, and use of non-petroleum sources of primary power for ground transportation* helped slow the growth of oil consumption. Nonetheless, high consumer demands created continuing need for foreign imports of oil, and the ratio of domestic oil production to domestic consumption dropped from the 1975 value of 0.61 to just below 0.53 by 1990 (Figure 1). Even though the ratio of domestic production continued to drop to 0.34 by the end of the century, leverage on prices was exerted by the demonstrated possibility of further increasing domestic production at threatened higher prices.

Decline in population growth rate aided in bringing about a balance between supplies and demand. Government policies were directed toward developing indigenous energy sources which could be used to expand highly automated capital-intensive industry without relaxation of acceptable conservation measures. Coal and nuclear sources were successfully exploited to increase domestic self-sufficiency. By the close of the century, coal and nuclear stations were contributing over 75 percent of electrical energy. The average

*By 2000 storage batteries, hydrogen fuel cells, flywheels, etc. accounted for over 15 percent of the transportation demand.

price of electricity for all consuming sectors stayed below 4 cents per kilowatt-hour, reaching 3.97 cents per kilowatt-hour by 2000 (Figure 18).

Continuous technological progress was seen to be the key to individual affluence and national security. By 1990 R&D spending had doubled from the mid-1970's level and equaled 5 percent of GNP. New technologies brought about fuller exploitation of ocean resources, as well as a better integration of energy-intensive industries. For example, techniques permitted construction of the first U.S. agro-industrial complex where waste heat was used in exploitation of the ocean through aquaculture. This consisted of a central station nuclear power plant for generating electricity and supplying the waste heat for agricultural and industrial uses.

In planning for industrial growth and for the exploitation of domestic raw material resources, the Federal Government produced guidelines which served as a voluntary framework for local planning. The desire to achieve high levels of air and water quality was one factor which influenced industrial placement and resource development. Efforts to reduce environmental impacts continued to require greater expenditures by the private sector. By 2000 business expenditures for pollution control reached \$17.8 billion, almost triple the 1975 value of \$6.2 billion.

Human Resources and Lifestyle. Advancing technology placed industry firmly in the hands of a highly technical and professional work force. But the rapid advances made job retraining necessary for most workers. Government support of retraining programs, through tuition reimbursement or through tax write-offs for industrial programs, provided the basis for a steady upgrading of the work force. From about the mid-1980's through the remainder of the century, unemployment averaged 5 percent which, given adjustments for job turn-overs, represented virtually full employment.

As population growth slowed, the rapid economic growth and the need for a large labor force increased the rate at which women entered the labor force. The participation rate rose from the 1975 level of 0.61 to 0.67 by 2000, and the civilian labor force numbered 130 million people by that year (Figures 23 and 24).

The participation of workers in corporate management and decision-making (through worker democracies) seemed to give positive support toward achieving industrial goals. By 2000 flexible working period (e.g., selection of hours worked during the day, selection of days worked during the week) and month-long vacations were achieved by over half of the work force. Productivity levels allowed the length of the work week to be reduced, and by 2000 the average number of hours worked per week was 31, compared to 36 hours in 1975 (Figure 22). Much of these gains were due to advances in automation technology. By the close of the century 50 percent of assembly line production was being controlled by computers.

Education was prized as a cultural asset and was not necessarily connected with career advancement. The emphasis placed on efficient learning and the increasing demand for education brought automated, individual instruction to all educational levels. Desire for self-expression gave rise to strong avocational interests. Courses in higher education often were filled by people who enjoyed study as a leisure time activity. Schools catered to the tastes of affluent young people who were sensitive to social needs, and who wished to participate in all aspects of the social process. The level of median education climbed from 12.3 years of schooling in 1975 to 14.5 years in 2000 (Figure 25).

Many innovations contributed to achieving a high level of education. By the last decade of the century, children were entering first grade at four years of age, and speed reading techniques had been made an essential part of the curriculum. By compressing the bachelor's degree into three years (from the conventional four, students were encouraged to move rapidly into graduate work.

Individual indulgence in leisure time activities increased personal consumption expenditures for recreation to \$223 billion by 2000, more than triple the 1975 level of \$66 billion (Figure 27). Development of large resorts, offering comprehensive schedules of sports and entertainment, proved to be popular attractions. By the close of the century several such facilities had been created around the country. For older people there was a strong tendency to move back into the central city where apartment dwelling could easily provide for many of their needs. In general, the relative desire for individual home ownership declined as the high-density cities became attractive centers for cultural expression, and people found satisfying social interactions in the unconstrained urban environment.

The desire for mobility was accelerated by the rising level of individual affluence. Ground-based systems, which were in large part a combination of non-petroleum consuming private vehicles and urban transit systems, meshed well with long distance systems. Indeed, most travel patterns reflected optimum cost and time trade-offs. Personal consumption expenditures for transportation rose to \$396 billion in 2000, more than triple the 1975 value of \$126 billion (Figure 26).

The United States welcomed the twenty-first century eagerly. The economy seemed secure and the approach that America had devised for government planning seemed to work. The national spirit was one of optimism for the future.

INTERNATIONAL CONDITIONS

The U.S. role in the world. The United States, as it entered the 1990's, had become clearly ascendant in terms of military power, economic growth, influence over flows of goods and money, and the success of its domestic economic and political system. However, this new-found authority was exercised less to dominate events in foreign regions or preserve the status quo, than to improve the human condition in authoritarian and less developed countries. This greater concern with social equity and political liberty tended to direct U.S. attention away from Europe; its approach toward Europe became less hegemonic, more concerned with encouraging the evolution of an autonomous European Community (EC), even at the cost of restrictive trade practices and declining U.S. influence on that continent. U.S. foreign policy became more concerned and directly involved in efforts to achieve increased development and more equitable distribution of wealth among LDC's, even though this support entailed market and price guarantees for LDC exports.

Although its power was clearly global in reach, the United States intervened less frequently as a direct participant in local events. The extent of its intervention was confined to diplomatic support for coherent regional coalitions of states, which maintained a balance of power in such areas as Africa and Asia. The United States also demonstrated a greater amenability to mediation and conciliation of disputes by international organizations and led a successful effort among developed countries to strengthen these institutions as instruments of peaceful settlement. The United States' major adversary continued to be the Soviet Union whose foreign policy continued to be expansionist and therefore posed certain risks for European and U.S. security.

Between the United States and the Soviet Union there developed substantial trade flows but very little cultural contact. The relationship was based upon the fundamental need to avoid a nuclear war, and the subsidiary diplomatic

requirements this entailed. Thus, there were cooperative efforts to quell certain conflicts among other states for which international institutions were inadequate, and continued efforts to negotiate arms limitations, and nonproliferation of nuclear weapons. However, there were very few instances of actual joint U.S.-Soviet intervention to either preserve the status quo or impose superpower solutions on regional events. In fact, the United States actively and successfully encouraged a more economically and strategically independent Western Europe, including a monetary union and the expansion of the EC to include Portugal, Spain, Greece, Austria, Switzerland, Yugoslavia, and Norway. These policies invited considerable Soviet disquiet, since they entailed an accretion in overall Western power. The achievement of a genuine and expanded European union also posed an extremely attractive--and frequently destabilizing--model which tended to pull Eastern Europe away from Soviet domination.

U.S.-Soviet diplomacy was also highly competitive among LDC's where each contended for influence with powerful emerging regional powers and revolutionary movements. The U.S.-Soviet relationship was also repeatedly complicated by increased U.S. domestic interest group opposition to extensive cooperation with authoritarian regimes and specifically a heightened concern for the protection of human rights in the Soviet Union. The Soviets also became highly suspicious of what they perceived as U.S. encouragement to the People's Republic of China (PRC) to play a more active role in Southeast Asia, and of alleged U.S. efforts to prolong the Sino-Soviet split.

A rough balance in U.S.-Soviet strategic forces was maintained, but at the cost of growing strain on the Soviet economy and a sharpening of Soviet internal debates regarding the allocation of scarce resources. These strains were exacerbated by continued underinvestment in, and inadequate production of,

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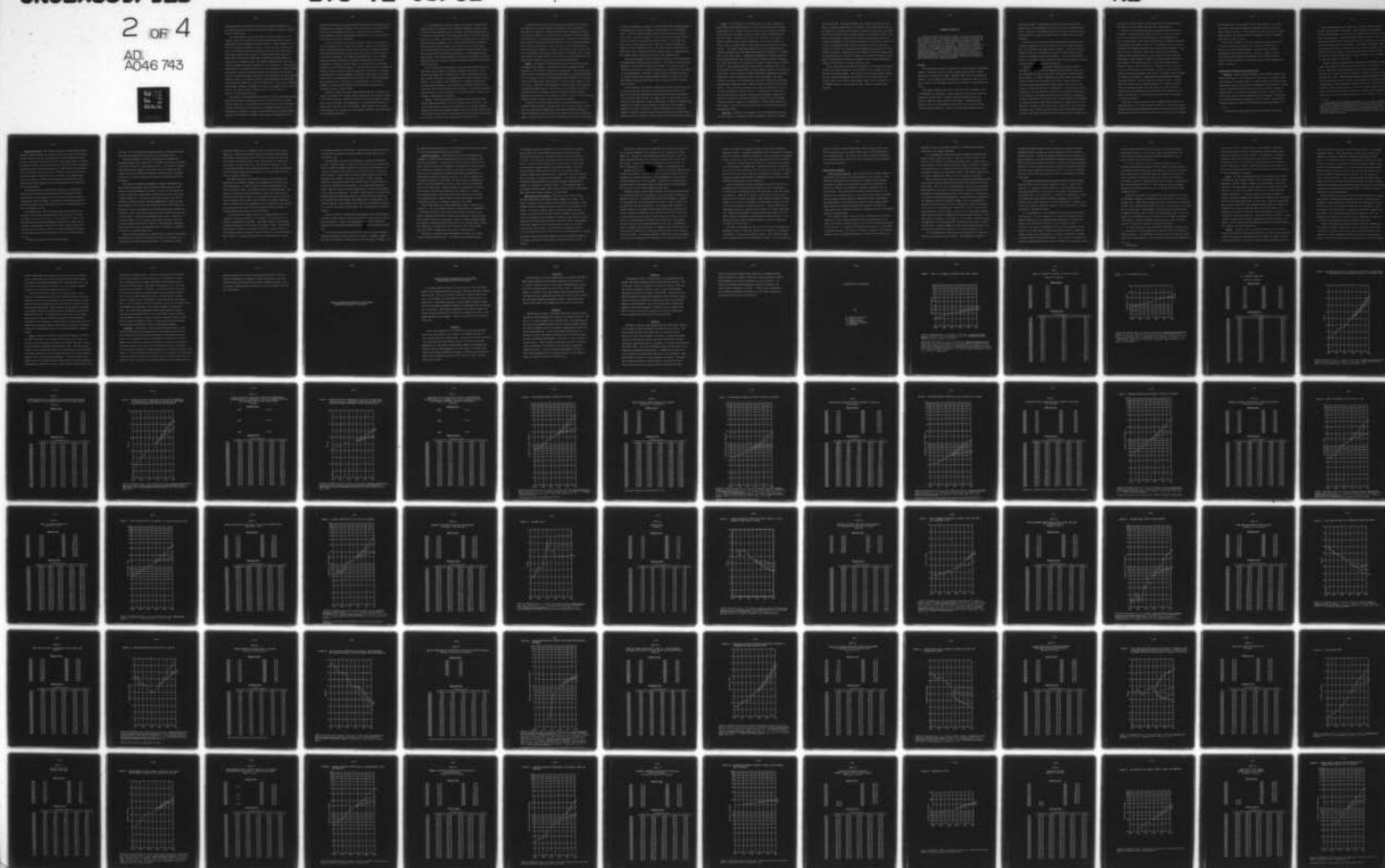
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Soviet agriculture, which rendered the Soviets increasingly dependent upon U.S. grain exports and therefore increasingly vulnerable to diplomatic pressure from the United States.

U.S. relationships with the LDC's were increasingly cooperative. U.S. economic growth and the stimulus this provided to LDC exports was a partial explanation for this growing detente with the LDC's. Equally important, however, was a basic and sympathetic change in the U.S. attitude towards its proper role in fostering economic development and political change among LDC's. This change entailed greater support for certain revolutionary movements, a more active U.S. Government sponsorship of technology transfer, higher aid levels, and a willingness to enter into commodity agreements and tariff preferences to enhance LDC income from exports to the United States. These measures were successful in removing the incentive for the development of resource cartels. The growing coincidence of interests between the United States and the LDC's, as well as rapid technological innovation in the United States and other developed countries, resulted in increased pressure on the Organization of Petroleum Exporting Countries (OPEC) and a split within OPEC ranks. Saudi Arabia, The United Arab Emirates, Indonesia, and Nigeria were forced to increase production and cut prices. This caused the price of OPEC crude oil to fall to \$11.54 per barrel by the year 2000 (Figure 46).

The removal of the confrontational element in U.S.-LDC relationships greatly benefited international organization, which became the arenas for increased U.S.-LDC cooperation. This cooperation was also reflected in declining Soviet influence, as the Soviet system was seen as increasingly irrelevant for LDC circumstances. Finally, U.S. support for LDC economic growth achieved concrete results as LDC economies diversified, export markets and earnings grew, and

external debt increased as important agricultural production technologies were transferred from developed countries to LDC's, and LDC's instituted effective population control measures (Figure 30). Improved DC-LDC relationships and increased per capita income permitted certain LDC's to liberalize controls over imports of goods and investments.

U.S.-EC relationships were close and cordial, based on a common recognition of interdependence in economics and security. While the U.S. economy remained a determining element in North Atlantic trade and investment patterns, the United States exercised relatively less control over U.S.-EC institutions as the period progressed. This largely self-imposed limit on U.S. influence entailed occasional acquiescence in European protectionist measures and a willingness to negotiate a code of conduct for the behavior of multinational companies, most of which were American. This increased tolerance for independent European foreign and domestic policies reflected a larger effort to encourage the development of a more independent, self-reliant Europe that in turn might remove some of the defense burden from the United States. While the Europeans were responsive to U.S. flexibility, the possibility of a U.S. military withdrawal from Europe still created occasional disputes considering the readiness of Europe to defend itself.

Internally, European economies became progressively more integrated, thus laying the groundwork for strategic self-sufficiency and the security of Europe in the 1990's and beyond. Europe also achieved a growing consensus on foreign policy objectives outside the European region, and these objectives were for the most part coincident with U.S. interests. Europe began to take a particularly active role in aid and trade relationships with Africa, and in the mediation of disputes among LDC's.

U.S. relationships with Japan continued to be intimate, shaped by their common interests in thwarting Soviet territorial ambitions in the Far East, by Japan's military dependence upon the United States (expressed through the U.S.-Japan Security Treaty), and by their common desire to maintain democratic institutions in Japan. However, there were also mutual efforts to reduce the extent of Japanese dependence on U.S. military protection and to develop a more balanced, equal relationship. There was greater U.S. tolerance for residual Japanese protectionism and its repeatedly successful export drives, which were perceived as necessary and healthy for a trade-dependent nation such as Japan. One concrete expression of increased ties between the United States and Japan was a tripling of two-way trade levels between 1974 and 2000 (Figures 38 and 39).

The U.S. objective of encouraging a more independent and self-sufficient Japan also involved support for Japanese diplomatic initiatives to settle territorial disputes with the Soviet Union, improve relationships with the PRC, and take a more active role diplomatically and even militarily in Asian affairs. As an element in this normalization of relations between Japan and its traditional adversaries, Japan dramatically increased the amount of its investment in Soviet and PRC raw materials resources. As the 1990's unfolded, Japan had become a far more influential actor in the politics, economics, and strategic relationships of the region.

Issues. Continued protection from possible though improbable Soviet military pressures concerned U.S. allies in Europe and the Far East. This entailed maintenance of both the U.S.-European and U.S.-Japanese alliances. However the security issue became somewhat muted by the increased power of the United States, with the result that European countries were able to concentrate increasingly on improving their own supra-European institutions.

In the domain of developed country-less developed country relationships, the former fears of neo-colonialism and developed country intervention in LDC affairs was replaced by a growing cooperativeness as developed countries concentrated on improving the distribution of wealth and stimulating economic growth among LDC's. The centrally planned economy countries were increasingly preoccupied with identifying and implementing new forms of economic management which retained central control while at the same time rationalizing the internal allocation of resources. Throughout the world the level of tension was reduced throughout the period and economic growth was generally rapid. Issues that normally preoccupied nations, such as security, became relatively less important, while issues of social justice became relatively more so.

Regimes. The regimes in most developed countries were heavily involved in managing their economies. The developed countries displayed coherent approaches to international relations and foreign policy. This foreign policy approach could be described generally as encouragement for democratic movements in other developed countries, for developmental efforts among LDC's, and transformation of international economic systems to narrow the gap between the rich and the poor. Democratic country regimes, by being relatively less responsive to corporate interests abroad, tended also to be less committed to defense of corporate interests in foreign countries, and relatively more willing to sacrifice the interests of their corporate citizens in LDC's in order to maintain diplomatic harmony or promote other foreign policy interests.

Governments of centrally planned economics, receiving pressure from increasingly strident domestic interest groups, under new, more youthful leadership, and finding their foreign policy objectives consistently thwarted in Europe and among LDC's, evolved towards more representative modes of decision-making. Politics within the Soviet Union and East Europe involved freer debate

of issues, and became more responsive to interests previously underrepresented in government (e.g. national minorities, intelligentsia, and the managerial elite). There was a growing tendency among socialist countries to question long-cherished ideological precepts and a greater interest in Western European countries as models of development for mixed economies. At the same time, there was great fear in Moscow of this liberalizing trend overwhelming the authority of local Communist parties. These fears created tension within the Soviet Party elite, occasional rhetorical outbursts against the United States, and a general lack of consistent direction in Soviet foreign policy.

East European regimes evolved towards more democratic forms of government, and increasingly challenged Soviet domination. They bickered constantly among themselves, raised historical territorial disputes with each other, and increasingly looked West or to their own pre-socialist histories for their models of future development. The Council of Mutual Economic Assistance evolved in the opposite direction as the West European community, as trade ties to the West expanded dramatically and Soviet ability to impose its will in Eastern Europe declined.

LDC's continued to be primarily authoritarian in form of government, preoccupied with national cohesion and consensus among diverse ethnic groups. Most of the LDC's had accelerating economic growth, but large discrepancies in income distribution remained. LDC regimes were for the most part revolutionary in their orientation towards international relations, but somewhat less demanding and strident in their diplomacy as developed countries began to respond to the needs of the LDC's. Certain former LDC's, such as Brazil, Venezuela, and Korea, clearly became developed countries by the 1980's and indeed became quite conservative in their approach towards international economics.

Actors. Actors continued to be nation-states, but certain regionally-based coalitions and institutions such as the EC, the Latin American Economic System (SELA), and a Japanese led Asian Economic System, played more prominent roles within their own region as well as in their region's relationship with the United States. This was true of the EC in particular, which backed by Europe's new-found foreign policy consensus and its collective economic influence, became a crucial element in most global issues, including U.S.-Soviet relations. But similar trends were evident in Latin America and Asia where regional alliances such as SELA began making important contributions to economic growth within their regions. International organizations, including the UN and its specialized agencies, also evolved towards increased influence in managing aid, trade, development, and conciliation of disputes between developed countries and LDC's. This increased influence reflected both the demands of LDC's and the willingness of the United States to invest greater authority in international institutions. Special purpose functional international organizations which were established to cope with specific issues, such as the seabed, outer space, atmospheric pollution, and environmental warfare were successfully established and succeeded in eliminating these issues as potential sources of international conflict. More traditional, regionally based functional organizations such as the General Agreement on Tariffs and Trade, the International Monetary Fund, and the Organization for Economic Cooperation and Development continued to be important as regulators of trade and investment among the developed, market-oriented economies. Generally, the development of international institutions both regional and global in scope was very rapid, with a diminishing effect on international tension.

Technology. The pace of technological change within developed countries increased rapidly, as governments devoted increasingly large sums to industry

and government R&D. Industrial innovation was carefully targeted by governments to maximize breakthroughs in such fields as data communications, the use of computers in industrial process control, agricultural production, raw material extraction, new energy sources, medical research, and population control. Many of these technologies, especially those developed with government R&D, were placed at the disposal of international organizations for transfer to the LDC's. This was accompanied by direct technical assistance provided by developed countries to the LDC's in helping them adopt appropriate technologies for their economic development. These efforts had an important and positive ramification for population control in LDC's; for example, the population increases in Latin America slowed perceptively during the period, and Latin American population totaled only 356 million by the year 2000 (Figure 30).

On the other hand the international diffusion of technologies with military potential was curbed through U.S.-Soviet agreement and a strengthened International Atomic Energy Agency. These efforts to control the spread of nuclear and other military technologies had the effect of preserving the size and relative power of the current nuclear weapons states, with the exception of the European Community, which during the 1990's achieved a common nuclear deterrent.

Hardships, Scenario D

The economic problems of the 1970's never were really solved; indeed they continued to grow. Energy prices climbed ever higher and kept an upward pressure on all prices. Capital shortages prevented fuller exploitation of domestic resources, with the result that the economy remained vulnerable to threats from various cartels. Despite the poor economic conditions, population growth remained high. Technological development was stunted due to the inability to adequately fund R&D programs. Failures in certain vital industries invited and even required government take-over and nationalization. No administration seemed capable of developing a cohesive and effective economic policy. Ad hoc programs managed to keep the severe conditions of the 1930's from being repeated, but evidence of demoralization could be found in the crowded, constricted urban lifestyle that characterized this lingering depression.

OVERVIEW

The United States entered the twenty-first century burdened by innumerable problems. During the previous 25 years, economic growth had been severely affected by the high cost of energy, especially since much of this energy was imported. Social processes had not been able to harmoniously resolve environmental conflicts, and shortages in materials had seriously retarded industrial growth.

The economic problems of the 1970's ultimately led to government control of fundamental U.S. industries. Capital resources were not able to meet the long-term investment needs of industry, and the Federal Government was forced to subsidize various sectors of the economy. Continuing national economic stress kept the government occupied with ad hoc measures and made effective planning impossible. Research and development programs were not

sufficiently funded. Technological developments concerning alternative energy sources and development of new raw material sources progressed very slowly. Inability to economically meet resource demands and uncertainty in the availability of resource supplies continued to make economic recovery impossible.

In the late 1970's and early 1980's the government attempted to gain voluntary compliance on the part of all sectors of the economy (industry, labor, the consumer) with needed economic austerity. Failure of voluntary restraints then led to governmental attempts to directly control what it termed as irresponsible institutional behavior. But the self-protecting posture of traditional private interests and the continued strain on resource suppliers made government programs ineffective.

Despite attempts at pump-priming, GNP growth was small because of the high cost of energy, and the disproportionate increase in labor costs over productivity was due in large part to the failure of needed technological progress. To further complicate the economic situation, population growth was higher than it had been in the 1970's. Despite problems of crowding, people began moving from outlying suburbs back into the cities, in part to offset the high cost of transportation. The government saw this movement as a means of achieving an economical concentration of delivery of vital services and encouraged the trend by giving priority to development of urban transportation for central cities. But the inability of government to expend the necessary funds limited development. Urban renewal also was deficient in funding, and the generally poor conditions of the city made for stressful living. With increasing population and a questionable economy, individual well-being, as measured both by material wealth and leisure time,

declined in the United States in comparison to what it would have been if the trends of the early 1960's and early 1970's had continued.

Beset by its own internal problems, the United States drifted into a position of increasing isolation from world affairs. During the 1980's international politics had become heterogenous, with the emergence of several formerly middle range powers into positions of significant influence. This development was largely a result of U.S. withdrawal from its previous global and even regional commitments into a fortress-like isolation. In the wake of this U.S. withdrawal, various new centers of power developed, including a West German-led Europe, a growing entente between Japan and South Korea, and the emergence of Brazil as a regional super power within Latin America. The sudden absence of U.S. power from Europe and Asia placed the People's Republic of China in a precarious position, forcing it to reach an accommodation with the Soviets. In some of these regions, dominant states were positioned at the center of coalitions, while in others, for example, Latin America, a single state acting autonomously exercised predominant influence. While in terms of raw military power, the United States and the Soviet Union remained ascendant, U.S. ability to utilize force for anything more than territorial defense was very limited as a result of the utter breakdown of any domestic political consensus in the realm of foreign policy. Events outside the United States increasingly took their own course.

The level of tension during the period remained extremely high as the geographic scope of U.S.-Soviet competition widened to include Latin America, and the Soviet's position improved dramatically in Western Europe and Japan. United States influence was proven to be low when both the European community

and Japan were able to successfully restrict their markets to U.S. trade. International institutions designed for peaceful resolution of disputes largely ceased to function. Local conflicts frequently escalated to involve regional powers, and coalitions formed and dissolved in order to maintain some elemental balance of power.

United States relations with less developed countries became strained as levels of foreign aid declined, and as the United States tried to preserve its historic trade advantages. Failure to exploit domestic energy sources put the United States at the mercy of resource cartels. This, together with frequent expropriations of U.S. property by LDC's served to deepen realization of the country's loss of world leadership and economic insecurity.

SOCIOECONOMIC CONDITIONS IN THE UNITED STATES

Demography. Despite economic hardships and the crowded conditions that became characteristic of the cities of the latter part of the century, there was no downturn in population growth. In these troubled and uncertain times, home became a place of refuge from an unrewarding social environment. Austere economic conditions decreased opportunities for young people to engage in leisure pursuits. The marriage rate remained relatively constant at the 1970's level, though divorces increased along with marriages. The fertility rate continued to be high, averaging 2.7 births per woman. The population reached 241 million in 1985 and 287 million by the year 2000 (Figure 1).*

*All figures are found together following the scenario narratives.

While the government tried to improve the urban environment, adequate funding for major projects was lacking. Despite government encouragement, the flow of people back into the cities was impeded by the slow rate of urban renewal and development. Needy rural people, directed toward the cities by government-sponsored training programs and relocation subsidies, found limited opportunities awaiting them in the cities. The struggle to maintain equilibrium between the rising urban population and the demand for housing, transportation, and other aspects of city life characterized the United States in the last part of the twentieth century. Urban deterioration led to crowding in almost every aspect of urban life.

Difficult economic conditions affected migration to the South* and West*, though these areas did overtake the rest of the country in their share of the U.S. population, reaching 55 percent by the close of the century. At the same time, the search for security tended to accelerate the rate of urban growth in those areas. Despite urban problems migration continued from rural areas to the cities. By the year 2000 the percentage of the population living in urban areas in the South and West exceeded the level for most of the country. By 2000 87 percent of the population in the South and West resided in urban areas, contrasted to 81 percent for Northeast* and North Central Divisions*. This compared with 71 and 76 percent, respectively, in 1970 (Figures 4 and 5).

*Four primary census regions are referred to: (1) the South, consisting of the South Atlantic, East South Central, and West South Central states; (2) the West, consisting of the Mountain and the Pacific states; (3) the Northeast, consisting of New England and the Middle Atlantic states; and (4) the North Central Division, consisting of the East North Central and West North Central states. The South and West contained 48 percent of the total U.S. population in 1970.

Economic conditions. The struggle to maintain a balance among resource supplies, resource demands, and imported resources continued to have serious economic impacts on domestic economic behavior. GNP was growing slowly as the end of the century approached; the growth rate remained under 1.5 percent between 1985 and 2000. By 2000 GNP had reached only \$2487 billion (Figure 6).^{*} Disposable personal income per capita was only \$5870 in 2000, a small growth over the 1975 value of \$5045 (Figure 8). Personal consumption expenditures grew slowly during the last quarter of the century, at an average annual rate of 1.9 percent. By 2000 the PCE had reached \$1510 billion (up from \$973 billion in 1975 (Figure 9), and an increasing portion was allotted to food and energy costs.

The expected recovery from the severe recession of 1973-1974 never materialized and the lack of governmental success in dealing with that problem seemed to characterize the lack of success of policies attempted throughout the 1980's and 1990's. An impasse of sorts developed between industry and government, with each citing the other's uncooperativeness and lack of meaningful planning.

The inflation rate, which was brought under control briefly in the mid-1970's, soon resumed its growth and averaged in excess of 7 percent from 1980 to the close of the century. The phenomena of stagflation (co-existing inflation and high unemployment) became the rule rather than an exception as unemployment hovered at the 9 percent level for most of the last quarter of the century. By 1995 the economy had suffered through a serious recession which was significantly worse than that experienced in

^{*}All dollar figures are in constant 1975 dollars.

1973-1974. In fact, during this recession capacity utilization fell below 70 percent and remained below that level for 2 consecutive years.

Government attempts to cope with increasing social problems kept government spending high, though many of its efforts fell short of providing the necessary stimulus to regain economic growth. Total government expenditures amounted to 57 percent of GNP in 2000, up from 35 percent in 1975 (Figure 15), and the accelerated government spending without a significant increase in the nation's economic base continued to aggravate the fiscal environment.

Due in part to substantial governmental financial requirements and a poorly functioning economy, capital resources proved inadequate to meet long-term capital requirements of industry. The AAA bond rate leveled off at about 9.25 percent, having slowly increased from the 1980 level of near 9 percent (Figure 13). As a result of these high interest rates and the low level of economic activity, industry spending on new plants and equipment averaged only 1.3 average annual growth from 1990 to 2000 (Figure 12). The growth in capital expenditures in the previous decade had increased some 1.9 percent a year. Both of these growth rates were substantially below the 4 percent annual average growth achieved from 1970 to 1974. Industry's reliance on external credit to finance capital needs continued to increase, but was much reduced from historic behavior. The percentage of investment needs financed by internal fund generation fell to 49 percent in 2000 from a 1976 level of 56 percent (Figure 14).

Given the capital shortage and a notable lack of success in implementing new technologies, productivity (output per man-hour of all persons in the non-farm private business sector) grew slowly. It averaged 1.7 annually

from 1980 to 1990 and only 1.2 percent in the last decade of the century. (Figure 11). Industrial production, slowed by inadequate capital spending and resultant low productivity, grew at a rate of 2 percent per year from 1980 to 1990, and even more slowly in the final decade of the century when it averaged 1.4 percent (Figure 10). The historical trend toward a more service-oriented economy was also slowed considerably. By 2000 the percentage of output accounted for by goods declined to only 40 percent from the 1976 level of 45 percent (Figure 17).

The chaotic character of the national economy, and particularly the frustration of the Federal Government, was exemplified by a number of disastrous occurrences. By 1990 two major U.S. cities had defaulted on substantial portions of their loan commitments and were declared bankrupt. The paralysis of Federal and state governments in dealing with this crisis accentuated the precarious condition of the municipal bond markets, and by the end of the century several other cities tottered on the edge of bankruptcy. Domestic problems were further aggravated when the European Economic Community and Japan erected prohibitive trade and investment restrictions which effectively denied market access to the United States.

In the atmosphere of economic stress, the struggle between labor and management forced the government to ban strikes in vital industries, for example in transportation and energy. Appropriate emergency powers granted the Federal Government in 1985 continued to remain in effect. Such measures were accepted as necessary to preserve social order. Economic conditions and resource shortages, coupled with loss of confidence in the Federal Government's ability to undertake corrective actions, tempted industry to seek a

more favorable business climate abroad. Anti-exodus laws finally were passed in 1990 penalizing industry for moving outside the United States by near confiscatory taxes.

Despite Federal initiatives in attempting to ameliorate the economic problems, conditions seemed to worsen as the twenty-first century approached. Though the Federal Government did not shirk from active intervention in the economic environment, there seemed to be a distinct lack of a coordinated policy direction. Despite these criticisms, Federal authorities were still designing a broad range of new policy initiatives. Workers seemingly marooned in rural poverty pockets were granted funds to subsidize their retraining and relocation to urban centers. Once retrained and relocated, however, many were unable to obtain employment and were added to the welfare rolls in their new environment. In order to reduce growth in the labor force, Federal authorities began encouraging early retirement and more schooling, but these measures, while having a very slight impact on unemployment, continued to aggravate the precarious fiscal position of the Federal Government as it reduced employment, and hence taxes, while increasing forms of transfer payments.

Late in the 1990's the Executive Branch managed to push through Federal legislation which installed an indexing system of all wages, prices, interest rates, and profits. Critics of the government argued that an attempt at indexing would merely institutionalize inflation without providing the needed cure.

As the country moved into the twenty-first century a national consensus regarding appropriate economic policy did not exist. Government, industry, and labor all attempted to blame the other for this sad state of affairs. The

year 2000 arrived with all factions of society dissatisfied with their economic lot and with no meaningful remedies on the horizon.

Energy and materials. Continuing shortages in raw materials led the government to attempt energy and resource rationing, but this added to the economic disorientation. Technology had not been adequate to resolve problems of nuclear safety and waste disposal, and anxiety over nuclear construction resulted in a significant decline in the growth of nuclear power. Further, lack of incentives for domestic exploration had significantly reduced domestic supplies of economical uranium. As a result, dependency on oil imports continued to be very high. By 1990 the ratio of domestic production to domestic consumption of crude oil was 0.41, down from the 1975 value of 0.61 (Figure 19). A belated attempt to provide funds for domestic oil exploration and production resulted in the formation of a publicly-owned petroleum company, which competed with the majors for an equal share of the domestic market. However, with oil demand still growing, the ratio of domestic production to consumption dropped to 0.24 by 2000.

Coal had been expected to provide substantial relief to dependency on foreign oil. But the continuing inability to fund acceptable accommodations to environmental effects, coupled with continuing labor disharmony and inadequate transportation facilities limited coal production. Levels projected for the 1980's fell short by 20 percent. Failure to achieve economic domestic fuel supplies, coupled with serious difficulties in the capital market, raised the average price of electricity for all sectors to over 4 cents per kwh during the 1990's, reaching 4.81 cents per kwh in 2000 (Figure 18).

Inability to successfully meet environmental constraints had a large impact on slowing economic growth. All industry suffered from the need

for adequately developed technology to deal with environmental problems. Even in agriculture, existing pesticides failed to give ecologically acceptable crop protection, and forced crop prices to rise as yields per acre fell. At the same time conservation efforts proved to be only half-hearted. Funds for R&D programs which would make for more efficient use of resources were severely limited by the weakened economy. While the general slowdown of growth reduced energy use, the imbalance between economical supplies and demand continued. Some movement away from environmental restraints was started by the government. In an effort to stimulate economically impaired industries, pollution abatement requirements were allowed to be dependent on industrial growth. As an additional means of encouraging industrial growth, areas with air pollution levels below maximum legal limits were allowed to increase to those limits.

Human resources and lifestyle. Industry in general did not reach the high technological level that had been foreseen in the 1970's. The public's demand for jobs continued to thwart advances in automation. Unemployment was high, averaging 9 percent for most of the last quarter of the century. The need for economic security and the necessity of sharing limited work opportunities forced the Federal Government to urge policies (such as encouraging early retirement or requiring a longer period of public education) that would restrict the size of the labor force. Discouragement forced many unemployed to give up their search for jobs. By 2000 the civilian labor force stood at only 113 million, representing a drop in the participation rate from 0.61 in 1975 to 0.57 in 2000 (Figure 24). Economic conditions, however, kept worker demand for full-time employment high, and the average weekly hours worked changed little from the 1975 value of 36 hours.

The percent of GNP spent by all government for social welfare increased as the century progressed, from 19 percent in 1975 to 38 percent by 2000 (Figure 21). Because of the financial difficulties facing most states, the Federal Government finally had to assume full responsibility for all public aid payments. Rigorous enforcement of immigration laws and controls were used to limit access of alien labor to the market or to governmental aid.

American society in the latter half of the century could be characterized as moody and uncertain. Inability to resolve problems of growth had led to a deceleration of economic growth and to the questioning of society's ability to deal rationally with its own problems. This anxiety was underscored on a personal level by job insecurity and by the wage earner's uncertainty about his own future and the rewards stemming from his labor.

Population density in the urban environment increased disproportionately to the services needed by the population in terms of housing, transportation, education, and so on. Life within the cities was just bearable. Standards of living generally were not much beyond the levels of the late 1970's, and in many places they had even declined. The generally somber economic conditions allowed for only modest relief through recreational activities, and personal consumption expenditures for recreation reached only \$103 billion by 2000, compared with \$66 billion in 1975, indicating a growth rate of 1.8 per year, or less than half the historic rate (Figure 27). Recreational activities tended to be non-energy dependent and low cost. The depressed level of affluence, and in particular the change in growth of affluence from the period after World War II, had serious effects on the cultural development of the cities. The crowded conditions of urban life provided an impetus for travel to the countryside or the seashore. In order to make such trips

possible, excursions were packaged at reduced costs, often as rewards to vacationing workers. To minimize overloading of all transportation facilities, these excursions were scheduled throughout the year and workers were assigned vacation periods (e.g., one or two weeks) largely on the basis of seniority.

All modes of transportation were strained as revenues proved inadequate to meet maintenance and capital needs. Limited urban transit, costly petroleum fuel for private automobiles, and declining long distance air and ground facilities all contributed to reduction in transportation demands. By 2000 personal consumption expenditures for transportation were only \$199 billion, compared with \$126 billion in 1975 (Figure 26).

Lack of technological progress depressed what had once been seen as a growing demand for professionals and technicians, and the percentage of the labor force in these areas did not rise appreciably in the last quarter of the century. While many of those who could remain in school did so to delay entry into the tight job market, higher education in general suffered. By 1990 one out of every ten colleges and universities in the country were forced to close down due to financial pressures. The government tried to encourage young people to remain in school because of the high unemployment rate. Efforts were undertaken to stem the high school dropout rate, and modest programs of financial aid were offered for higher education. At the turn of the century, median schooling had risen to only 13.5 years from the 1975 level of 12.3 years.

The strain on resources also was evident in the lack of reliability of fundamental services. There were blackouts and brownouts due to shortages or breakdowns in electrical generating equipment. Often there were delays due to equipment failure in the transportation system. By the year 2000 the

country, far from the technological dream pursued during the earlier part of the twentieth century, was still trying to meet its fundamental needs in an acceptable manner. The century closed with a feeling of resignation to a continuing economic struggle, but with no insights as to what programs would really be effective.

INTERNATIONAL CONDITIONS

The U.S. role in the world. The United States in the 1980's became an isolationist power, with its interest hemispheric but not global in scope. The United States was perceived by others as xenophobic and suspicious, susceptible to sudden and unpredictable assertions of military force to protect U.S. prestige, but incapable of sustained, consistent action in world politics. The isolation which enveloped the United States in the 1980's was not coordinated with U.S. allies, and occurred despite increased military capabilities and diplomatic influence of America's adversaries. The unpreparedness of the international system for such a change created great suspicion and tension in international relations, and caused the reappearance of old, irredentist conflicts, heightened terrorism and aggressive behavior by regional giants.

U.S. diplomacy became a series of ad hoc, intermittent and unilateral assertions of force, usually in defense of what it considered to be its "sphere of influence" in Latin America, or in response to some imagined insult to its prestige. U.S. military power was great but useless as an instrument of diplomacy because of the lack of U.S. domestic consensus on the legitimate purposes to which force should be applied. In sum, the U.S. capacity for

effective action in international relations was being sapped by domestic social unrest and economic stagnation.

U.S. relationships with the Soviet Union were highly contentious and prone to miscalculation and conflict. There was continual risk that the Soviets, as they probed U.S. weaknesses in Europe, Asia, and Latin America, might trespass on some unspoken boundary and trigger an outbreak of conflict. The United States, as it withdrew from areas of previous influence, often proclaimed interests it was unwilling to defend, then suddenly applied force on behalf of objectives for which there was no warning or precedent.

This continuous state of conflict and uncertainty eroded agreements which had previously expressed common interests between the United States and the Soviet Union. This was true of such agreements as SALT, Mutual and Balanced Force Reductions, the protocols of the Conference on European Security and Cooperation, the Nonproliferation Treaty, and the Test Ban. In addition to the erosion of these important agreements, the growing suspicion between the two superpowers reduced the sphere for common action, and eliminated any possibility of joint efforts to halt the transfer of strategic technologies to new states or avoid escalation of peripheral conflicts. This suspicion also spilled over into the economic realm, as the U.S. government tightened export controls on sales of technology and limited credits available to the Soviet Union for imports of U.S. products. U.S. efforts to rectify the growing imbalance in its relationship with the Soviets by improving its links to the PRC failed, as China recognized--as the Europeans had before--that alliance with the United States could be of no particular benefit to it.

U.S. relationships with less developed countries were also highly contentious with occasional direct conflict. The slackening of demand for

raw materials among developed countries deprived less developed countries of maximum resource leverage, but sporadic embargoes of certain imported materials did occur. The failure among developed countries to exploit alternative energy sources provided Organization of Petroleum Exporting Countries (OPEC) with continued leverage and cohesion, and made the cartel increasingly attractive to other non-OPEC countries with significant petroleum production. The result was an escalation of petroleum prices to the level of \$18.96 per barrel by the year 2000, and expansion of OPEC to include Mexico and Brazil (Figure 46).

The growing dissension between developed countries and less developed countries (LDC's) and the relative stagnation in the U.S. economy led to declining U.S. foreign aid levels, opposition to improved terms of trade that might benefit LDC's, reduced flows of technology, food donations and concessional sales to poor countries. In addition, the desperation in which the United States found itself occasionally triggered certain actions--mining the sea, threats against LDC's which expropriated U.S. property, violent actions against revolutionary regimes in Latin America--which, although unsuccessful, exacerbated tensions.

U.S. relationships with its European allies were increasingly distant and contentious. The U.S. withdrawal of its troops from Europe, and the dubious credibility of its remaining formal commitments to the defense of Europe, placed the European Community (EC) in a position of great insecurity, since the U.S. withdrawal of troops was not preceded by any reduction in the Soviet threat. Moreover, Europe was unable to achieve the common political will, economic power, or military capabilities to sustain a credible defense against Soviet pressure. Thus, there was a scramble for some safe diplomatic posture on the part of individual European states, which

usually entailed a dissociation from alliances with the United States. Europe became neutral in the U.S.-Soviet disputes, and developed a conciliatory posture towards increasingly powerful Communist Parties in Europe as well as with the Soviet Union.

U.S.-EC relations were further aggravated by chronic trade and investment disputes as increasingly troubled economies and rising interest group demands pressured governments into controls on the export of currency, higher levels of protectionism and beggar thy neighbor monetary policies. By the year 2000, U.S. exports to the EC had increased only modestly to \$21.3 billion, while U.S. imports from the EC had increased to approximately \$21.0 billion (Figures 34 and 35).^{*} The increase in two-way investment between the United States and the EC by the year 2000 was equally modest (Figures 36 and 37).

Disputes within Europe, once suppressed by the presence of U.S. forces and diplomatic influence, re-emerged during the late 1980's to further erode European unity. These disputes usually were based upon historical animosities, in which France and the United Kingdom were usually arrayed against the growing force of West Germany. Simultaneously, the more powerful position enjoyed by Communist Parties in Italy, France, Spain and Portugal lent a certain permanence to the European position of neutrality and also aggravated disunity within Europe, as European Communist Parties maintained their traditional hostility to European unification in economics and defense.

U.S. relationships with Japan deteriorated throughout the period as the U.S. renunciation of the obligations of its security treaty left Japan dangerously isolated. This stimulated a search on the part of Japan for accommodation with the Soviet Union, as the Japanese were forced into concessions to

^{*}1974 dollars

the Soviets in order to settle the Kuril Islands dispute. Closer ties with the PRC were also cemented, and preferential trade agreements were concluded with certain resource rich LDC's, including Brazil. Generally, traditional trade patterns were severely disrupted by U.S. and European protectionism, and there was a shift in these patterns towards a greater regional orientation. Japanese investment increasingly flowed towards the PRC and the Soviet Union, both of which invited sizable Japanese investments in their unexploited raw materials.

Issues. The issue which preoccupied most states throughout the 1980's and 1990's was, quite simply, security. This was especially true of middle range powers and LDC's formerly aligned to the United States. These countries had to seek protection in either neutrality or alliance with the other super power, to adjust their domestic politics and to develop autonomous military capabilities. In the United States, there was no consensus on issues as globalists struggled with isolationists, militarists with pacifists, and U.S. policy swung abruptly one way or the other. Centrally planned economies, while concerned with their lagging economic growth, were largely preoccupied--the Soviets, in particular--with taking full advantage of U.S. withdrawal and internal divisiveness without overstepping the limits to U.S. tolerance and igniting a nuclear war. For certain resource rich LDC's, issues involved the most effective means of expanding their influence within their regions. For most LDC's with large minority populations and powerful aggressive neighbors, the issue was survival.

Regimes. Democratic regimes in developed countries were under severe economic and political pressure during the 1980's and 1990's, as economic performance deteriorated and diplomatic position became less secure. Interest groups which suffered as a result of economic problems among developed coun-

tries, became highly politicized, and participated actively in the foreign policymaking process. Their objectives, of course, were to minimize any commitment of resources towards more equitable distribution of global wealth. In certain Western countries, particularly in France, Italy, Spain, Portugal, and within the Labor Party of the United Kingdom, Communist Party influence increased dramatically. In other countries with somewhat weaker Communist Parties, extremist forces of both left and right suddenly reappeared and garnered increased support. This was true, for example, in Japan, Germany, and Austria. This increasing dissent and upheaval within domestic politics of the major developed countries had the effect of immobilizing foreign policymaking, precluding any effective bilateral or multilateral cooperation, and preventing any significant shift in resources towards the resolution of basic social ailments.

Centrally planned economies were also under severe pressure as economic growth waned and developed country markets for their raw material exports diminished. Soviet agricultural output did not rise significantly, and the unavailability of U.S. food exports forced the Soviet government to order the slaughter of livestock with a consequent severe setback to agricultural development. East European economies were also stagnant as Soviet raw materials costs rose and Western export markets disappeared. Popular dissatisfaction was frequently expressed, and harshly dealt with.

Despite these failures of domestic economic policy and institutions, the successes of Soviet foreign policy, as well as the lack of any viable alternative to dependence on the Soviet Union, served to maintain Soviet authority both over its domestic population and within the East European states. The price of this dominance was increased use of coercion, continued

economic inefficiency, and a growing lack of respect for Soviet institutions and practices within the less developed world and Western Europe. The benefits of continued dictatorship were an enlarged discretion in the allocation of huge resources for defense, for aid to foreign Communist Parties and to revolutionary movements among the LDC's.

LDC regimes were harsh, repressive, and highly unstable, utterly incapable of stimulating economic growth or stemming population increases (Figures 30 and 33), with only sporadic export earnings from raw materials. The LDC's suffered declining aid levels from developed countries and from international organizations. They were under constant pressure from dissident factions, national or ethnic minorities, and neighboring states with aggressive intentions. Violence within and between LDC's became endemic, with no effective regional or global machinery for achieving peaceful settlements of these disputes. Conflicts within and between LDC's were frequently sources of global tension as competitive intervention by developed countries and large regional powers was a constant danger and occasional reality.

Actors. Primary actors within the international system of the 1980's and 1990's continued to be individual states acting, in most cases, unilaterally, and occasionally in coalitions which shifted constantly, developing and dissolving, depending upon the issue at stake. The only genuinely cohesive block of countries continued to be the Warsaw Pact, which benefited from Soviet dominance over Eastern Europe and the lack of a viable European Community model for East European development. Functional international organizations which formerly reflected common interests and similar political systems among the developed countries, became victims of protectionist forces

in Europe and the United States. This was the case with such institutions as the General Agreement on Tariffs and Trade, the International Monetary Fund, the Organization for Economic Cooperation and Development, and the International Energy Agency. NATO became a hollow shell as U.S. rhetorical commitments were deprived of credibility. International organizations such as the UN and its various specialized agencies became polarized and immobilized by splits between developed countries and less developed countries, while U.S. refusal to pay its allocations to the International Labor Organization, the UN Conference on Trade and Development, and the UN Industrial Development Organization, contributed to the complete collapse of these institutions. New international organizations which seemed logically required to manage new international issues (e.g., seabed mining, nuclear proliferation, atmospheric pollution, spread of dangerous organisms) failed to evolve. Terrorist groups representing national or ethnic minorities became increasingly significant as disruptive forces in international relations.

Technology. Technological innovation was essentially stagnant, as the economic incentives for new technologies all but disappeared and the government focused its R&D resources almost exclusively on military related technology. This brought forth some very sophisticated technologies of warfare. Though this technology was perceived as necessary to defend the United States from a hostile world, very little of it was actually useful as an instrument of foreign policy, and much of it added significantly to the level of international tension. U.S.-Soviet relations were rendered even more unstable by the uncertainty concerning the state of the other's military hardware and the characteristics of military doctrine, while the fear of miscalculation as interests became less well

defined, suffused the U.S.-Soviet relationship with tension. This was further exacerbated by the diffusion of these technologies to LDC's and terrorist groups which frequently use them for diplomatic blackmail, and for generally enhancing their influence out of all proportion to their numbers or legitimacy.

2.106

FEDERAL GOVERNMENT EXPENDITURES FOR NON-DEFENSE
AERONAUTICAL RESEARCH AND DEVELOPMENT

FEDERAL GOVERNMENT EXPENDITURES FOR NON-DEFENSE
AERONAUTICAL RESEARCH AND DEVELOPMENT

The revised scenarios described in this volume deal only with general domestic and international social and economic conditions which may influence the future NAS. They do not include projections of potential NAS development. In the absence of any discussion of specific aviation policy, the application of trend impact analysis to project Federal Government expenditures for non-defense aeronautical research and development must be considered only illustrative. The following narratives are only meant to suggest how Federal non-defense aeronautical research and development may relate to the general movement of each scenario. Table 47 and Figure 47 show the results of the TIA.

Scenario R

As the country approached the mid-1980's the economy provided growth rates which were acceptable to all sectors. The Federal direction of a total planning effort was moving smoothly. Research and development spending in the entire economy reached almost 5 percent of GNP by the year 2000. Measures such as taxes based on environmental impacts and on energy usage funnelled funds into R&D programs. As a result Federal non-defense aeronautical R&D spending benefited and averaged 4.5 percent annual growth from 1980 to 2000, reaching \$2.16 billion by the end of the century (up from \$0.56 billion in 1975).

Scenario A

While GNP grew at an annual average rate of 1.2 percent from 1980 to 2000, Federal spending for non-defense aeronautical R&D increased at 1.9 percent. The major thrust of the research and development activity was toward achieving greater efficiency within the NAS. Specifically drawing on a portion of the funds collected from increased energy and environmental taxes, expenditures were directed at more efficient uses of fuel and toward lessening environmental impacts. These expenditures reached \$1.18 billion, just doubling the 1975 level of \$0.56 billion.

Scenario B

Expenditures for Federal non-defense aeronautical R&D grew rapidly from 1980 to 2000 (increasing by an average of 6.5 percent annually). GNP rose at a 4.9 percent annually over the same period. The large surge in air travel and the emphasis placed on R&D in the entire economy (Federal and private) combined to lead to substantial expenditures on Federal non-defense aeronautical R&D. In fact, these Federal expenditures were necessary to ensure that Federal responsibilities in the NAS were being met with technological improvements at least equal to those provided by private industry. While the Federal Government continued to encourage private initiatives, it found that it had to provide a coordinated technological base to insure the required development of the NAS. By 2000, Federal expenditures for non-defense R&D rose to \$3.21 billion, nearly six times the 1975 level of \$0.56 billion.

Scenario C

In assuming the role of the prime mover in the centrally-directed economy, the Federal Government heavily influenced R&D activities. GNP increased at a rate of 4.7 percent over the 20-year period to 2000, and under Federal Government initiatives, total research and development expenditures increased to 5 percent of GNP by 1990. In the Federal non-defense aeronautical research and development program, government activity focused on energy use efficiency, environmental issues, and on airport expansion and modernization. Due to this focused effort, Federal R&D spending in this area increased at an annual rate of 6.3 percent from 1980 to the end of the century, reaching \$3.13 billion in 2000, about five and one-half times the 1975 level of \$0.56 billion.

Scenario D

The chaotic conditions that characterized the entire nation resulted in an unstable economy and strongly influenced R&D in all sectors. GNP growth slowed noticeably and averaged only a 1.6 percent increase annually over the last two decades of the century. Federal non-defense aeronautical R&D spending, however, maintained the historical trend of growing more rapidly than GNP and it averaged a 2.5 percent increase annually from 1980 to 2000. This level of funding, however, did not result in any significant improvements within the NAS. It seemed that the lack of a total transportation system policy resulted in rather meaningless, fragmented efforts on the part of both government and industry. Industries which interacted directly in the NAS severely criticized the lack of clear policy direction on the part of Federal authorities and aimed

sharp criticisms at the unproductive research and development program. Federal authorities in response stated that private aeronautical research and development was at least as unproductive as Federal efforts. An adversary environment had supplanted the cooperative dealings of the earlier years of commercial air travel. By 2000, Federal expenditures for new defense aeronautical R&D reached to \$1.32 billion, little more than double the 1975 level of \$0.56 billion.

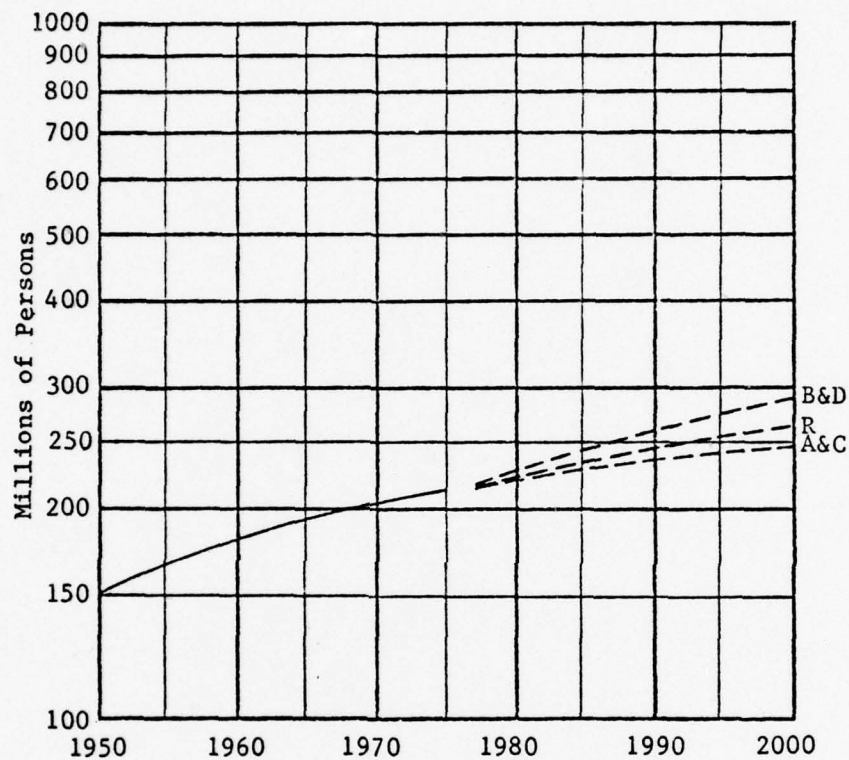
2.111

PROJECTIONS OF THE VARIABLES

Key

R = Resource Allocation
A = Limited Growth
B = Expansive Growth
C = Individual Affluence
D = Hardships

FIGURE 1. TOTAL U.S. POPULATION (INCLUDING ARMED FORCES ABROAD)



SOURCE OF HISTORICAL DATA: U.S. Bureau of the Census, Current Population Reports, Series P-25, No. 632 (Washington, D.C.: U.S. Government Printing Office, July 1976), Table 7, pp. 14-16.

SOURCE OF PROJECTIONS: U.S. Bureau of the Census, Current Population Reports, Series P-25, No. 601 (Washington, D.C.: U.S. Government Printing Office, October 1975), Tables 7-9, pp. 41-118. (Projections B&D correspond to Series I, Projection R corresponds to Series II, and Projections A&C correspond to Series III. Assumed fertility rates are 2.7, 2.1, and 1.7 births per woman for Series I, II, and III, respectively.)

Table 1

TOTAL U.S. POPULATION (INCLUDING ARMED FORCES ABROAD)

(Millions of Persons)

Historic Data

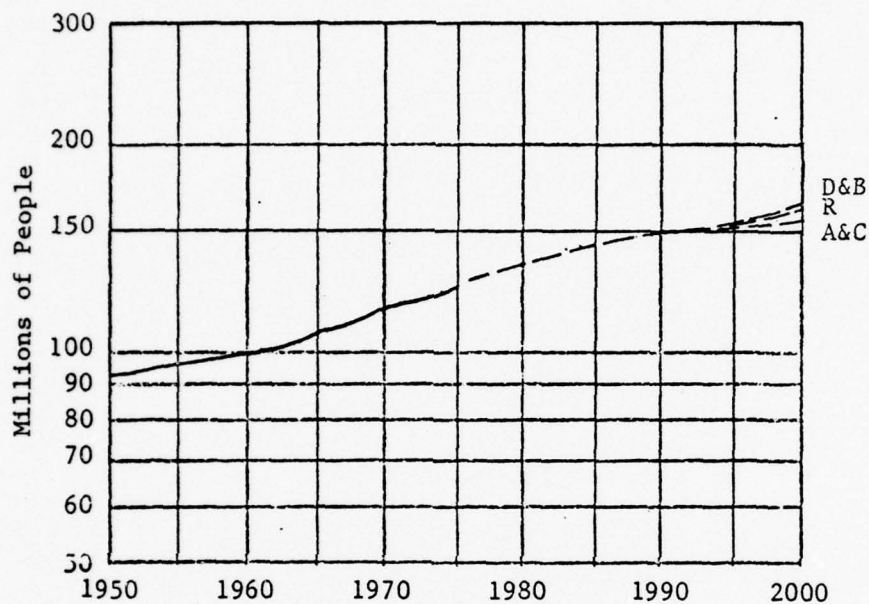
1950	152.2	1963	189.2
1951	154.8	1964	191.8
1952	157.5	1965	194.3
1953	160.1	1966	196.5
1954	163.0	1967	198.7
1955	165.9	1968	200.7
1956	168.9	1969	202.6
1957	171.9	1970	204.8
1958	174.8	1971	207.0
1959	177.8	1972	208.8
1960	180.6	1973	210.3
1961	183.6	1974	211.9
1962	186.5	1975	213.5

Projected Data

S C E N A R I O

	A, C	B, D	R
1976	214.6	215.6	215.0
1977	215.8	217.8	216.3
1978	217.2	220.3	218.6
1979	218.7	222.9	220.6
1980	220.3	225.7	222.7
1981	221.9	228.6	224.9
1982	223.5	231.6	227.2
1983	225.1	234.7	229.4
1984	226.7	238.0	231.7
1985	228.3	241.2	234.0
1986	229.8	244.5	236.3
1987	231.3	247.8	238.5
1988	232.8	251.1	240.8
1989	234.2	254.4	242.9
1990	235.5	257.6	245.0
1991	236.8	260.8	247.1
1992	238.0	263.8	249.0
1993	239.1	266.8	250.9
1994	240.2	269.3	252.7
1995	241.1	272.6	254.4
1996	242.0	275.5	256.1
1997	242.9	278.3	257.7
1998	243.7	281.1	259.3
1999	244.4	284.0	260.9
2000	245.0	287.0	262.4

FIGURE 2. U.S. POPULATION AGES 18-64



SOURCE OF HISTORICAL DATA: U.S. Bureau of the Census, Current Population Reports, Series P-25, No. 310 (June 1965); No. 311 (July 1965), No. 519 (April 1974) and No. 614 (November 1975). (Projections B&D correspond to Series I, Projection R corresponds to Series II, and Projections A&C correspond to Series III. Assumed fertility rates are 2.7, 2.1, and 1.7 births per woman for Series I, II, and III, respectively.)

Table 2

U.S. POPULATION AGES 18-64

(Millions of People)

Historic Data

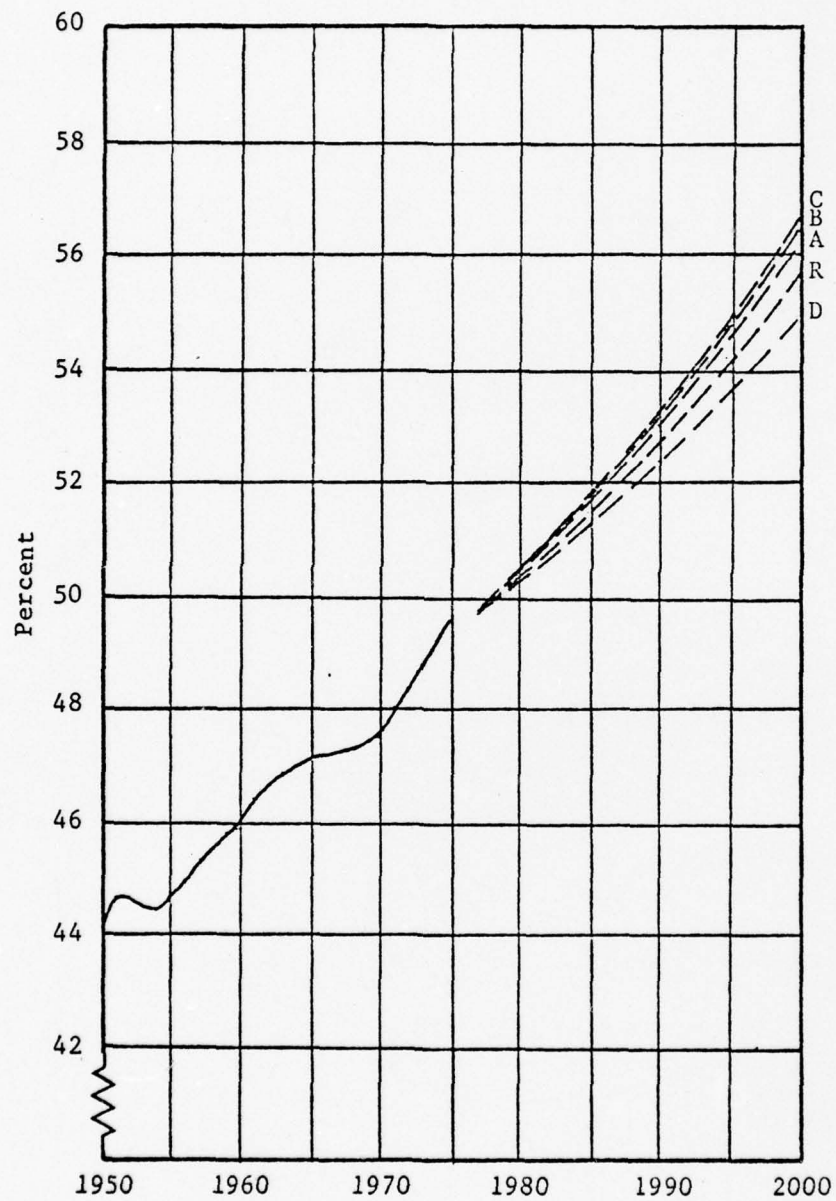
1950	92.6	1963	103.1
1951	93.2	1964	104.2
1952	93.8	1965	106.2
1953	94.4	1966	108.0
1954	95.0	1967	109.2
1955	95.6	1968	111.5
1956	96.4	1969	113.2
1957	97.1	1970	115.1
1958	97.7	1971	117.0
1959	98.5	1972	118.9
1960	99.4	1973	120.8
1961	100.8	1974	122.8
1962	101.9	1975	124.9

Projected Data

S C E N A R I O

	A.C	B.D	R
1976	126.9	126.9	126.9
1977	129.0	128.9	129.0
1978	131.0	130.9	131.0
1979	133.0	133.0	133.0
1980	134.9	134.9	134.9
1981	136.8	136.9	136.9
1982	138.7	138.8	138.7
1983	140.3	140.4	140.4
1984	141.7	141.7	141.7
1985	142.8	142.8	142.8
1986	143.9	143.9	143.9
1987	145.0	145.0	145.0
1988	146.2	146.2	146.2
1989	147.5	147.5	147.5
1990	148.4	148.5	148.4
1991	149.2	149.3	149.2
1992	150.0	150.0	150.0
1993	150.7	151.0	150.8
1994	151.4	152.4	151.8
1995	151.9	154.0	152.9
1996	152.8	155.9	154.2
1997	153.8	158.0	155.7
1998	154.8	160.2	157.3
1999	156.0	162.7	159.0
2000	157.1	165.2	160.8

FIGURE 3. RESIDENT POPULATION IN THE COMBINED SOUTH AND WEST CENSUS REGIONS AS A PERCENTAGE OF TOTAL RESIDENT POPULATION OF THE UNITED STATES



SOURCE OF HISTORICAL DATA: U.S. Bureau of the Census, Current Population Reports, Series P-25, No. 304 (April 8, 1965), No. 460 (June 7, 1970), No. 520 (July 1974), No. 533 (October 1974), and No. 615 (November 1975).

Table 3

RESIDENT POPULATION IN THE COMBINED SOUTH AND WEST CENSUS REGIONS
AS A PERCENTAGE OF TOTAL RESIDENT POPULATION OF THE UNITED STATES

(Percent)

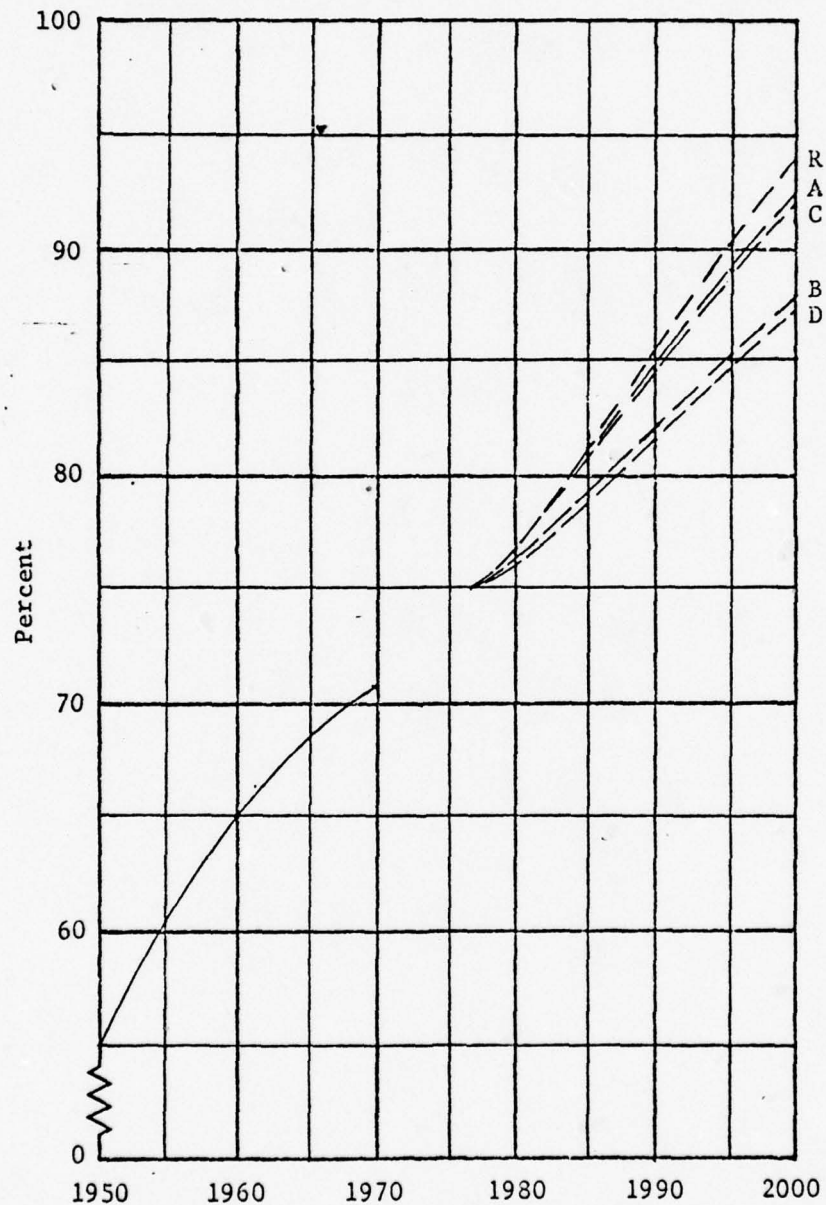
Historic Data

1950	44.25	1963	47.01
1951	44.74	1964	47.15
1952	44.77	1965	47.24
1953	44.62	1966	47.25
1954	44.50	1967	47.29
1955	44.77	1968	47.43
1956	45.09	1969	47.62
1957	45.44	1970	47.66
1958	45.64	1971	48.06
1959	45.91	1972	48.41
1960	45.95	1973	48.88
1961	46.49	1974	49.28
1962	46.81	1975	49.61

Projected Data

	S C E N A R I O				
	A	B	C	D	R
1976	49.58	49.58	49.58	49.58	49.58
1977	49.82	49.82	49.82	49.82	49.82
1978	50.04	50.05	50.05	50.03	50.05
1979	50.25	50.27	50.27	50.22	50.25
1980	50.44	50.49	50.49	50.37	50.44
1981	50.62	50.69	50.69	50.51	50.62
1982	50.82	50.90	50.90	50.65	50.78
1983	51.04	51.13	51.12	50.82	50.97
1984	51.29	51.38	51.37	51.01	51.18
1985	51.56	51.64	51.63	51.21	51.40
1986	51.85	51.94	51.92	51.44	51.65
1987	52.14	52.23	52.21	51.67	51.89
1988	52.44	52.53	52.52	51.91	52.15
1989	52.73	52.84	52.83	52.16	52.42
1990	53.02	53.14	53.14	52.41	52.70
1991	53.31	53.45	53.46	52.66	52.98
1992	53.61	53.77	53.79	52.92	53.28
1993	53.91	54.09	54.12	53.17	53.57
1994	54.21	54.40	54.45	53.42	53.86
1995	54.52	54.72	54.80	53.67	54.16
1996	54.83	55.04	55.13	53.92	54.45
1997	55.14	55.35	55.47	54.18	54.75
1998	55.46	55.67	55.81	54.44	55.05
1999	55.78	55.99	56.14	54.70	55.34
2000	56.09	56.31	56.46	54.96	55.63

FIGURE 4. POPULATION LIVING IN URBAN AREAS (USING THE 1970 DEFINITION OF URBAN AREAS) AS A PERCENTAGE OF THE TOTAL RESIDENT POPULATION IN THE COMBINED SOUTH AND WEST CENSUS REGIONS



SOURCE OF HISTORICAL DATA: U.S. Bureau of the Census, Historical Statistics of the United States, Colonial Times to 1970, Bicentennial Edition, Part 1 (Washington, D.C.: U.S. Government Printing Office, 1975), Series A172 and 178, p. 22.

Table 4

POPULATION LIVING IN URBAN AREAS (USING THE 1970 DEFINITION
OF URBAN AREAS) AS A PERCENTAGE OF THE TOTAL RESIDENT POPULATION
IN THE COMBINED SOUTH AND WEST CENSUS REGIONS
(Percent)

Historic Data

1950 54.83

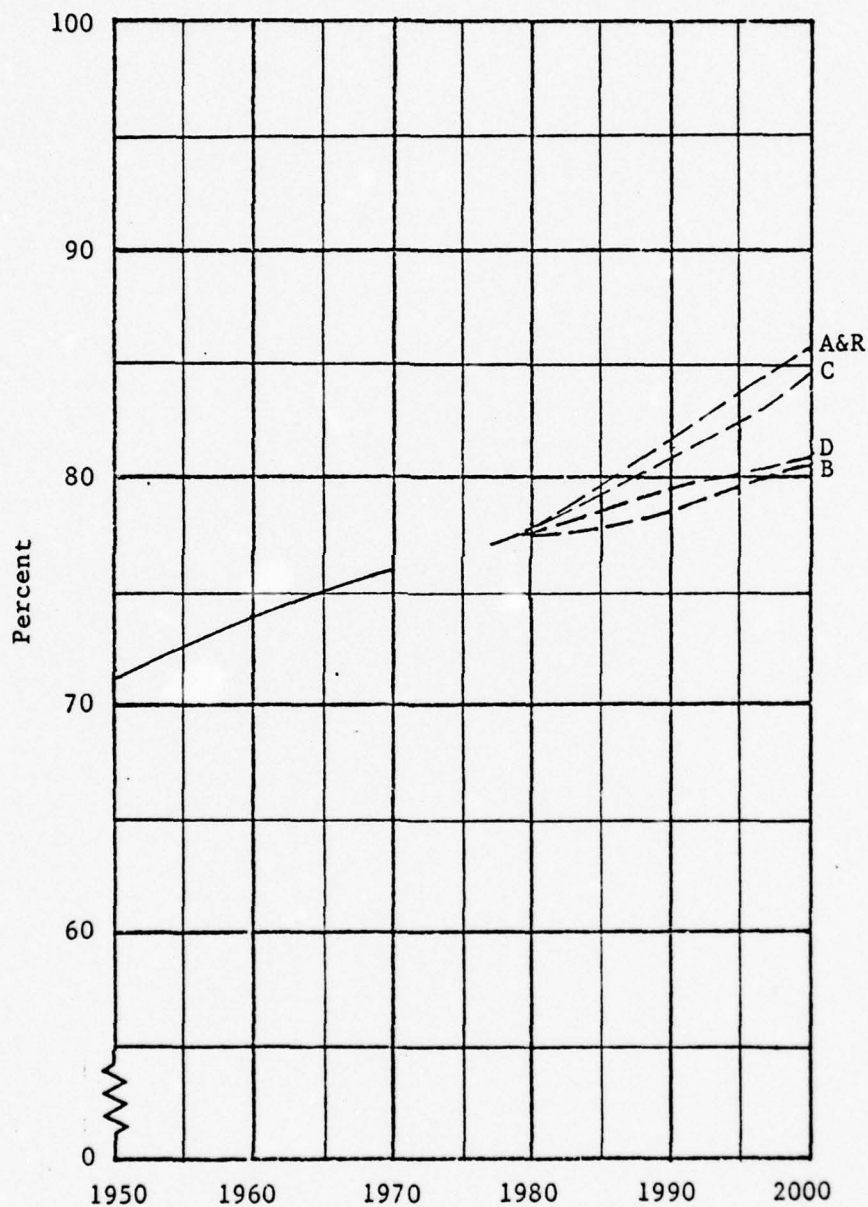
1960 64.98

1970 71.06

Projected Data

	S C E N A R I O				
	A	B	C	D	R
1976	74.54	74.54	74.54	74.54	74.54
1977	75.03	75.03	75.03	75.03	75.03
1978	75.50	75.50	75.50	75.50	75.50
1979	76.00	75.98	75.99	75.99	76.00
1980	76.51	76.46	76.48	76.48	76.52
1981	77.04	76.94	76.98	76.97	77.05
1982	77.66	77.44	77.56	77.49	77.68
1983	78.36	77.96	78.22	78.03	78.41
1984	79.14	78.50	78.95	78.59	79.24
1985	80.00	79.06	79.76	79.16	80.15
1986	80.89	79.62	80.69	79.74	81.10
1987	81.81	80.21	81.47	80.34	82.09
1988	82.75	80.80	82.36	80.93	83.10
1989	83.72	81.42	83.27	81.52	84.15
1990	84.66	82.02	84.17	82.10	85.17
1991	85.59	82.62	85.07	82.67	86.19
1992	86.49	83.21	85.96	83.23	87.19
1993	87.34	83.77	86.83	83.75	88.14
1994	88.17	84.34	87.70	84.26	89.08
1995	88.97	84.88	88.55	84.75	89.98
1996	89.72	85.40	89.37	85.22	90.84
1997	90.45	85.92	90.18	85.67	91.65
1998	91.09	86.40	90.91	86.10	92.37
1999	91.65	86.85	91.54	86.51	92.99
2000	92.17	87.30	92.12	86.92	93.55

FIGURE 5. POPULATION LIVING IN URBAN AREAS (USING THE 1970 DEFINITION OF URBAN AREAS) AS A PERCENTAGE OF THE TOTAL RESIDENT POPULATION IN THE COMBINED NORTHEAST AND NORTH CENTRAL REGIONS



SOURCE OF HISTORICAL DATA: U.S. Bureau of the Census, Historical Statistics of the United States, Colonial Times to 1970, Bicentennial Edition, Part 1 (Washington, D.C.: U.S. Government Printing Office, 1975), Series A172 and 178, p. 22.

Table 5

POPULATION LIVING IN URBAN AREAS (USING THE 1970 DEFINITION
OF URBAN AREAS) AS A PERCENTAGE OF THE TOTAL RESIDENT POPULATION
IN THE COMBINED NORTHEAST AND NORTH CENTRAL REGIONS
(Percent)

Historic Data

1950

71.32

1960

73.91

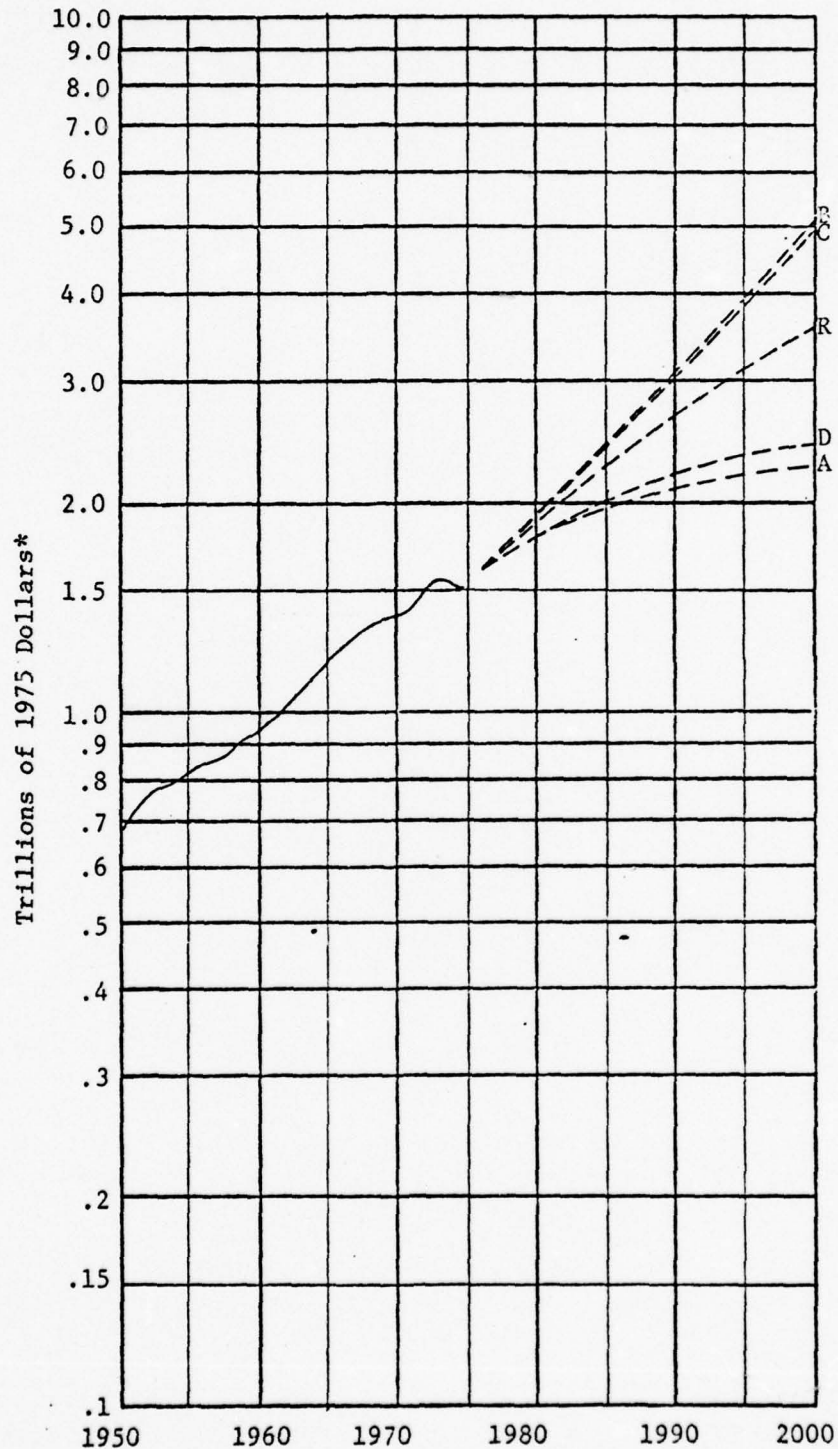
1970

75.68

Projected Data

	S C E N A R I O				
	A	B	C	D	R
1976	76.56	76.56	76.56	76.56	76.56
1977	76.69	76.69	76.69	76.69	76.69
1978	76.82	76.82	76.82	76.82	76.82
1979	76.96	76.95	76.95	76.95	76.95
1980	77.11	77.07	77.08	77.09	77.10
1981	77.29	77.21	77.21	77.24	77.26
1982	77.52	77.35	77.40	77.41	77.49
1983	77.86	77.53	77.67	77.63	77.84
1984	78.27	77.73	78.01	77.86	78.27
1985	78.75	77.95	78.41	78.11	78.78
1986	79.27	78.18	78.84	78.37	79.33
1987	79.82	78.40	79.28	78.63	79.88
1988	80.38	78.64	79.73	78.87	80.43
1989	80.96	78.88	80.21	79.12	80.98
1990	81.52	79.09	80.66	79.33	81.49
1991	82.05	79.30	81.12	79.53	81.98
1992	82.57	79.49	81.57	79.72	82.44
1993	83.04	79.67	81.99	79.89	82.87
1994	83.49	79.83	82.41	80.04	83.27
1995	83.93	80.00	82.82	80.19	83.67
1996	84.33	80.17	83.22	80.32	84.05
1997	84.72	80.34	83.62	80.45	84.43
1998	85.03	80.50	83.96	80.57	84.74
1999	85.28	80.64	84.23	80.67	85.00
2000	85.52	80.80	84.48	80.78	85.24

FIGURE 6.. GROSS NATIONAL PRODUCT (CONSTANT 1975 DOLLARS)



SOURCE OF HISTORICAL DATA: U.S. Bureau of Economic Analysis, Business Statistics, 1975 (Washington, D.C.: U.S. Government Printing Office, May 1976), p. 1; Survey of Current Business, Vol. 56, No. 7 (July 1976), Table 1.1, p. 24.

* Adjusted by implicit price deflator for GNP.

Table 6

GROSS NATIONAL PRODUCT (CONSTANT 1975 DOLLARS)
(Trillions of 1975 Dollars*)

Historic Data

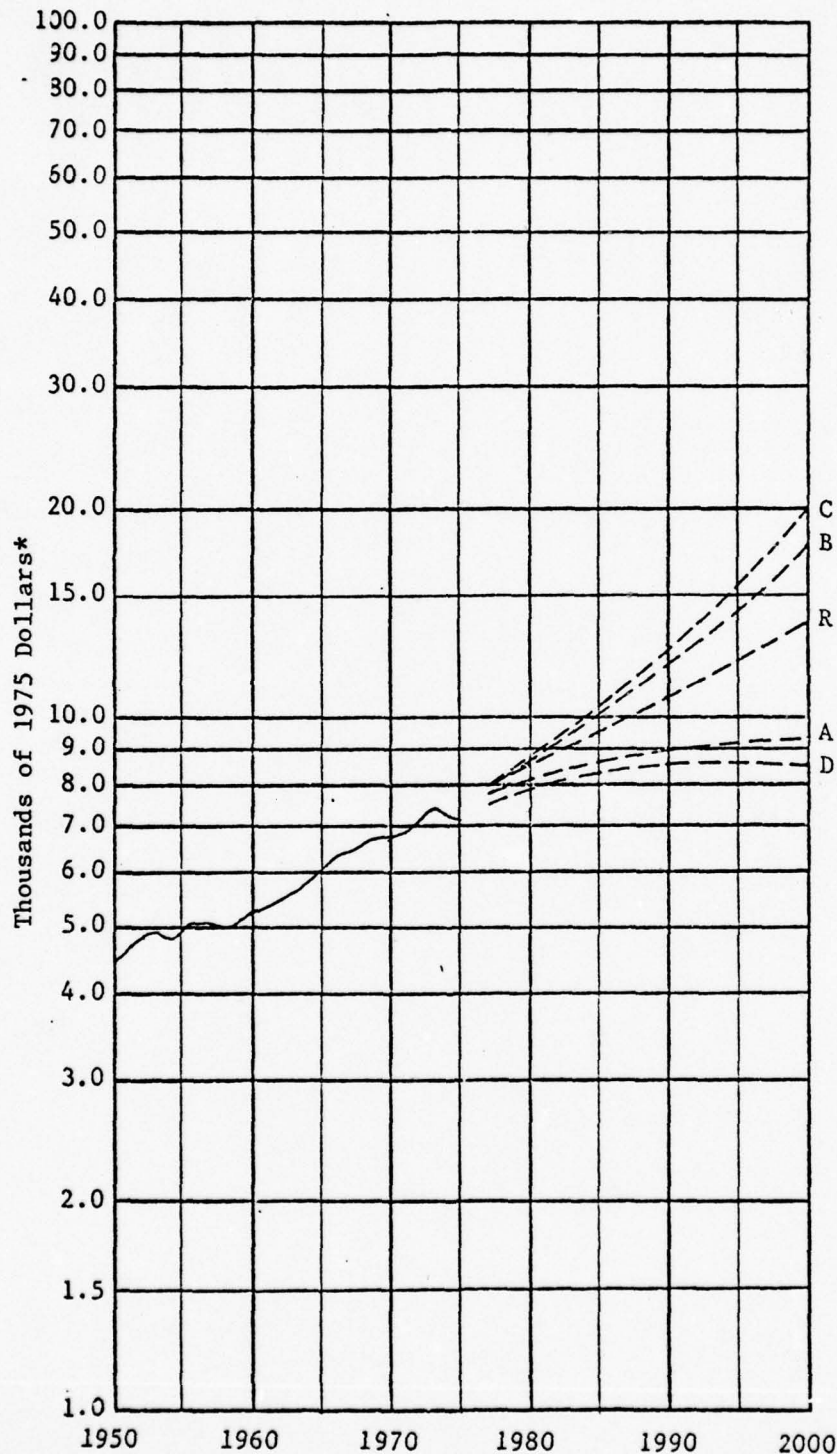
1950	.6790	1963	1.0721
1951	.7336	1964	1.1125
1952	.7617	1965	1.1783
1953	.7912	1966	1.2483
1954	.7808	1967	1.2823
1955	.8333	1968	1.3384
1956	.8511	1969	1.3727
1957	.8665	1970	1.3682
1958	.8648	1971	1.4092
1959	.9169	1972	1.4901
1960	.9377	1973	1.5714
1961	.9612	1974	1.5448
1962	1.0169	1975	1.5163

Projected Data

	S C E N A R I O				
	A	B	C	D	R
1976	1.5920	1.5920	1.5920	1.5920	1.5921
1977	1.6590	1.6910	1.6910	1.6590	1.6908
1978	1.7120	1.7720	1.7720	1.7120	1.7650
1979	1.7620	1.8550	1.8550	1.7560	1.8320
1980	1.8070	1.9410	1.9410	1.8020	1.9090
1981	1.8470	2.0260	2.0240	1.8490	1.9810
1982	1.8860	2.1150	2.1110	1.8950	2.0510
1983	1.9230	2.2080	2.2010	1.9400	2.1220
1984	1.9580	2.3050	2.2970	1.9830	2.1970
1985	1.9860	2.4070	2.3950	2.0190	2.2740
1986	2.0120	2.5220	2.5050	2.0510	2.3490
1987	2.0340	2.6430	2.6210	2.0820	2.4260
1988	2.0540	2.7700	2.7410	2.1140	2.5070
1989	2.0750	2.9090	2.8730	2.1450	2.5900
1990	2.0950	3.0540	3.0110	2.1770	2.6670
1991	2.1160	3.2070	3.1550	2.2100	2.7470
1992	2.1380	3.3740	3.3130	2.2430	2.8300
1993	2.1590	3.5490	3.4790	2.2770	2.9150
1994	2.1810	3.7340	3.6520	2.3090	3.0020
1995	2.1980	3.9280	3.8350	2.3390	3.0920
1996	2.2160	4.1320	4.0270	2.3690	3.1850
1997	2.2330	4.3470	4.2280	2.4000	3.2800
1998	2.2510	4.5730	4.4400	2.4290	3.3790
1999	2.2690	4.8110	4.6620	2.4580	3.4800
2000	2.2870	5.0610	4.8950	2.4870	3.5840

*Adjusted by implicit price deflator for GNP.

FIGURE 7. GROSS NATIONAL PRODUCT PER CAPITA (CONSTANT 1975 DOLLARS)



SOURCE OF HISTORICAL DATA: GNP: U.S. Bureau of Economic Analysis, Business Statistics, 1975 (Washington, D.C.: U.S. Government Printing Office, May 1976), p. 1; Survey of Current Business, Vol. 56, No. 7 (July 1976), Table 1.1, p. 24; Total U.S. Population: U.S. Bureau of the Census, Current Population Reports, Series P-25, No. 632 (July 1976), Table 7, pp. 14-16.

*Adjusted by the implicit price deflator for GNP.

Table 7

GROSS NATIONAL PRODUCT PER CAPITA (CONSTANT 1975 DOLLARS)
(1975 Dollars)

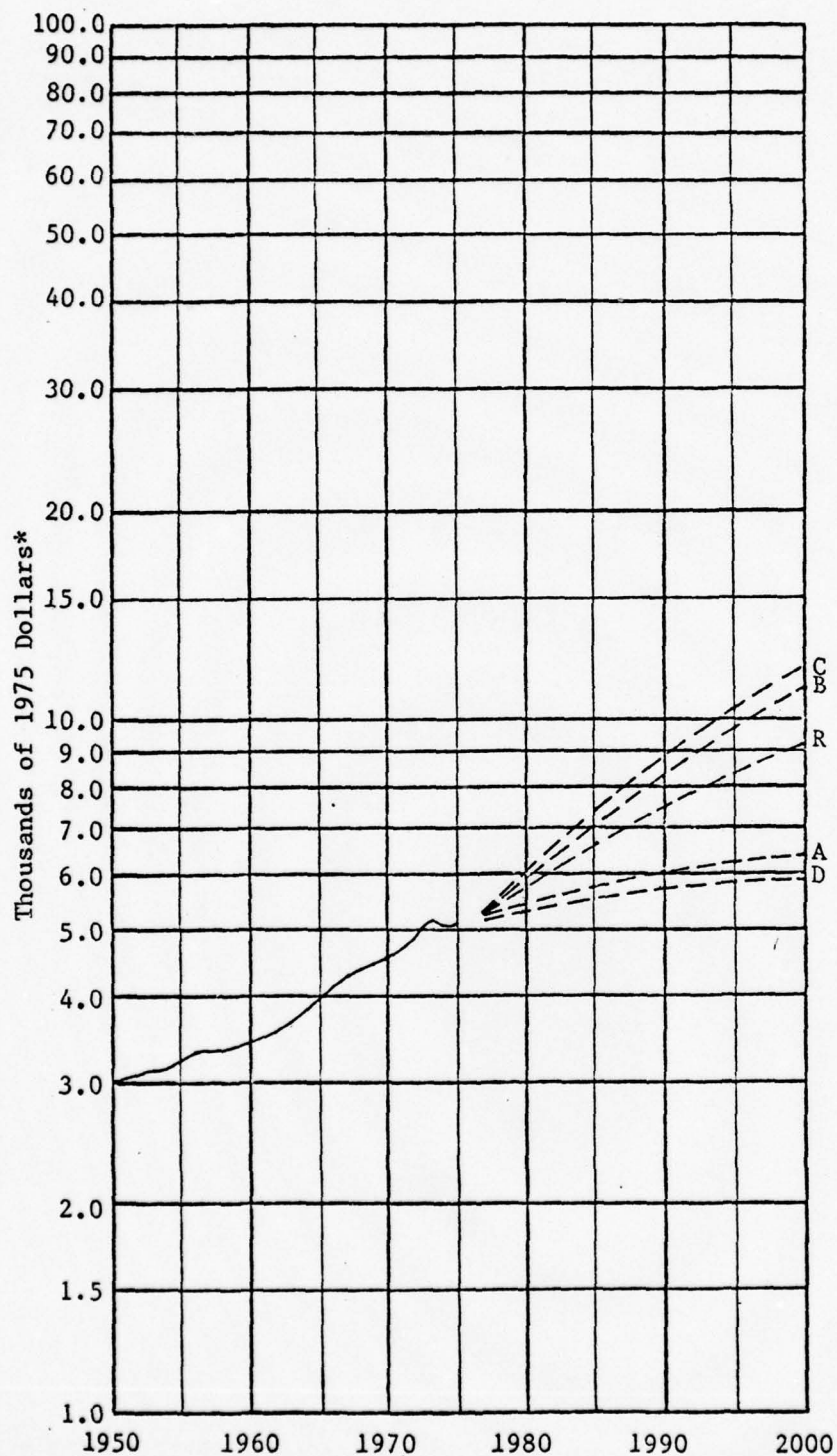
Historic Data

1950	4,461	1963	5,666
1951	4,739	1964	5,800
1952	4,836	1965	6,064
1953	4,941	1966	6,352
1954	4,790	1967	6,453
1955	5,022	1968	6,668
1956	5,039	1969	6,775
1957	5,040	1970	6,680
1958	4,947	1971	6,807
1959	5,156	1972	7,136
1960	5,192	1973	7,472
1961	5,235	1974	7,235
1962	5,452	1975	7,102

Projected Data

	S C E N A R I O				
	A	B	C	D	R
1976	7418.5	7384.	7418.	7384.0	7405.
1977	7687.7	7764.	7836.	7617.1	7799.
1978	7882.1	8044.	8158.	7771.2	8074.
1979	8056.7	8322.	8482.	7878.0	8305.
1980	8202.5	8600.	8811.	7984.0	8572.
1981	8323.6	8863.	9121.	8088.4	8808.
1982	8438.5	9132.	9445.	8182.2	9027.
1983	8542.9	9408.	9778.	8265.9	9250.
1984	8637.0	9685.	10132.	8331.9	9482.
1985	8699.1	9979.	10491.	8370.6	9718.
1986	8755.4	10315.	10901.	8388.5	9941.
1987	8793.8	10666.	11332.	8401.9	10172.
1988	8823.0	11031.	11774.	8419.0	10411.
1989	8859.9	11435.	12267.	8431.6	10663.
1990	8896.0	11856.	12786.	8451.1	10886.
1991	8935.8	12297.	13323.	8473.9	11117.
1992	8983.2	12790.	13920.	8502.7	11365.
1993	9029.7	13302.	14550.	8534.5	11618.
1994	9079.9	13840.	15204.	8558.2	11880.
1995	9116.5	14409.	15906.	8580.3	12154.
1996	9157.0	14998.	16640.	8598.9	12437.
1997	9193.1	15620.	17406.	8623.8	12728.
1998	9236.8	16268.	18219.	8641.1	13031.
1999	9284.0	16940.	19075.	8654.1	13364.
2000	9334.7	17634.	19980.	8665.5	13659.

FIGURE 8. DISPOSABLE PERSONAL INCOME PER CAPITA (CONSTANT 1975 DOLLARS)



SOURCE OF HISTORICAL DATA: U.S. Bureau of Economic Analysis, Business Statistics 1975 (Washington, D.C.: U.S. Government Printing Office, May 1976), p. 8; Survey of Current Business, Vol. 56, No. 7 (July 1976), Table 2.1, p. 32.

*Adjusted by implicit price deflator for personal consumption expenditures.

Table 8

DISPOSABLE PERSONAL INCOME PER CAPITA (CONSTANT 1975 DOLLARS)
(1975 Dollars)*

Historic Data

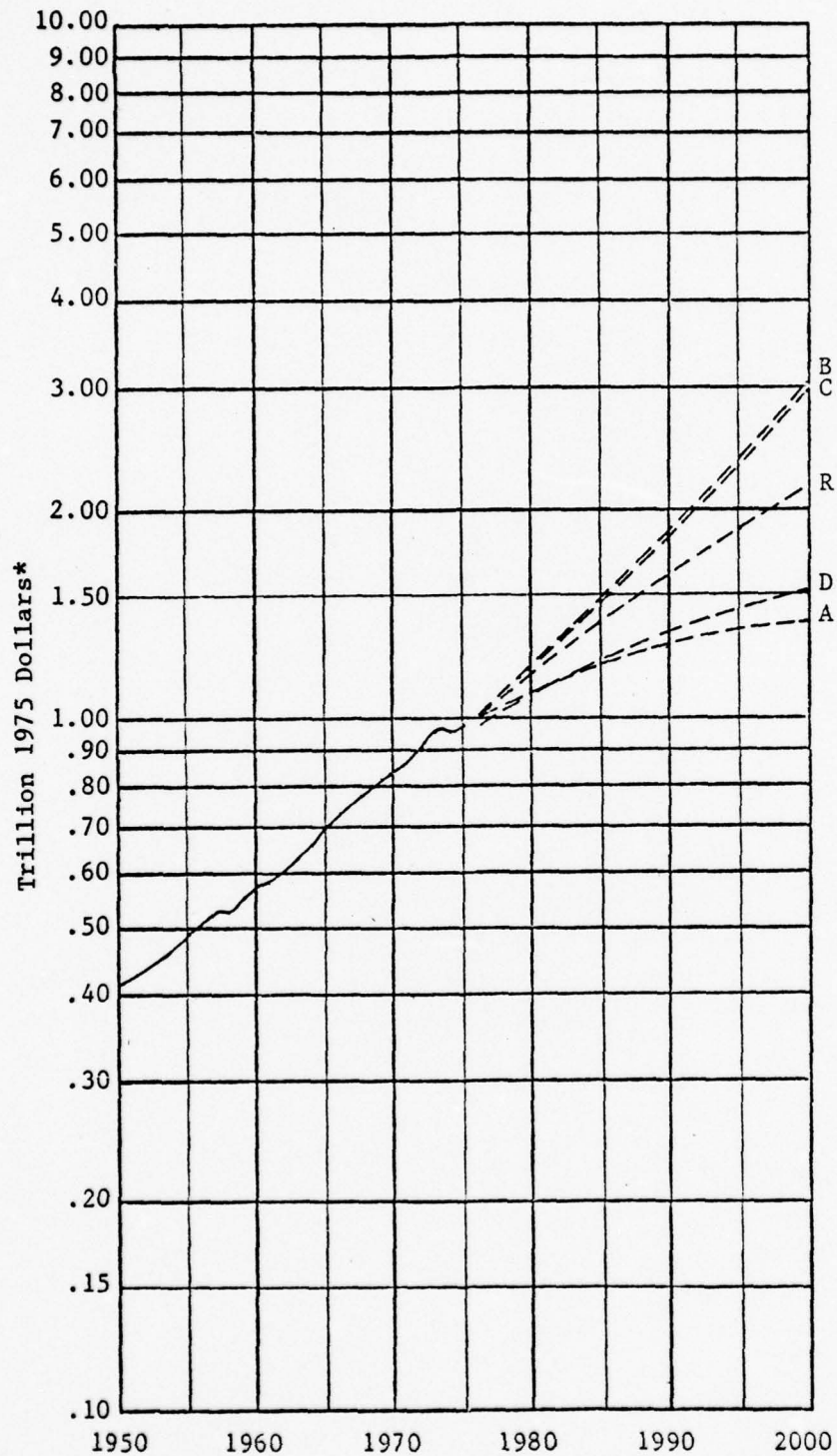
1950	3000	1963	3602
1951	3031	1964	3797
1952	3062	1965	3984
1953	3131	1966	4135
1954	3112	1967	4255
1955	3244	1968	4373
1956	3323	1969	4438
1957	3336	1970	4575
1958	3316	1971	4678
1959	3393	1972	4845
1960	3405	1973	5143
1961	3443	1974	5012
1962	3530	1975	5043

Projected Data

	S C E N A R I O				
	A	B	C	D	R
1976	4984.0	4961.0	4984.0	4961.0	4974.0
1977	5169.0	5222.0	5271.0	5121.0	5245.0
1978	5303.0	5415.0	5271.0	5228.0	5435.0
1979	5423.0	5607.0	5493.0	5303.0	5594.0
1980	5524.0	5799.0	5941.0	5377.0	5779.0
1981	5608.0	5981.0	6155.0	5450.0	5942.0
1982	5688.0	6167.0	6378.0	5515.0	6093.0
1983	5760.0	6357.0	6607.0	5574.0	6106.0
1984	5825.0	6549.0	6851.0	5621.0	6237.0
1985	5869.0	6752.0	7098.0	5648.0	6570.0
1986	5908.0	6984.0	7379.0	5662.0	6724.0
1987	5935.0	7225.0	7676.0	5672.0	6883.0
1988	5955.0	7478.0	7980.0	5685.0	7048.0
1989	5981.0	7755.0	8319.0	5695.0	7222.0
1990	6007.0	8045.0	8675.0	5710.0	7375.0
1991	6035.0	8349.0	9045.0	5726.0	7535.0
1992	6068.0	8688.0	9455.0	5733.0	7706.0
1993	6100.0	9041.0	9842.0	5770.0	7880.0
1994	6135.0	9411.0	10336.0	5787.0	8060.0
1995	6160.0	9802.0	10778.0	5803.0	8249.0
1996	6188.0	10207.0	11322.0	5817.0	8442.0
1997	6213.0	10634.0	11848.0	5835.0	8644.0
1998	6244.0	11080.0	12406.0	5847.0	8853.0
1999	6276.0	11542.0	12994.0	5858.0	9064.0
2000	6311.0	12019.0	13614.0	5866.0	9284.0

*Adjusted by implicit price deflator for personal consumption expenditures

FIGURE 9. PERSONAL CONSUMPTION EXPENDITURES (CONSTANT 1975 DOLLARS)



SOURCE OF HISTORICAL DATA: U.S. Bureau of Economic Analysis, Business Statistics 1975 (Washington, D.C.: U.S. Government Printing Office, May 1976), p. 1; Survey of Current Business, Vol. 56, No. 7 (July 1976), Table 1.1.

*Adjusted by implicit price deflator for personal consumption expenditures.

Table 9

PERSONAL CONSUMPTION EXPENDITURES (CONSTANT 1975 DOLLARS)
(Trillion 1975 Dollars*)

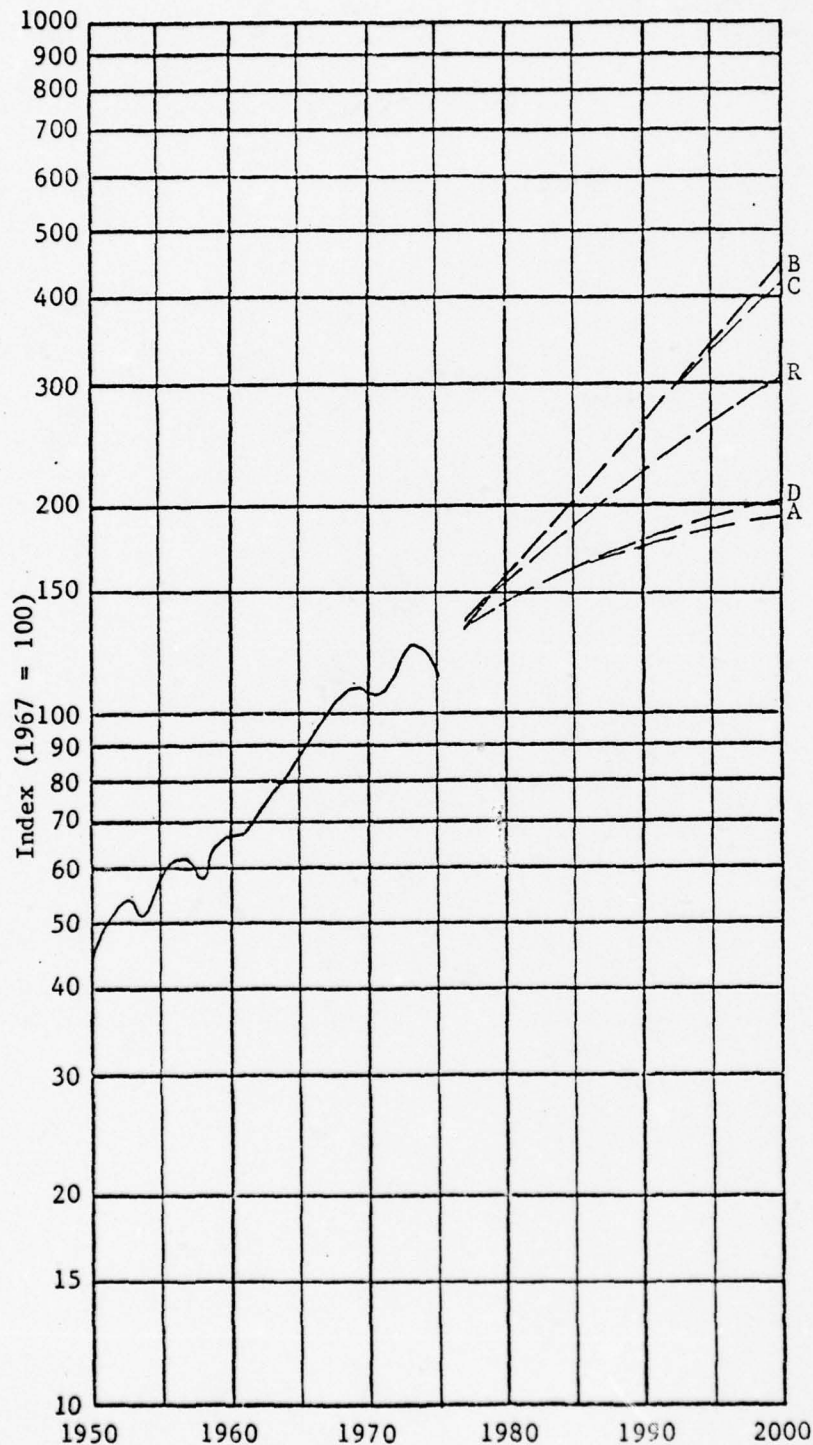
Historic Data

1950	.4267	1963	.6338
1951	.4323	1964	.6184
1952	.4431	1965	.7052
1953	.4594	1966	.7401
1954	.4679	1967	.7615
1955	.4994	1968	.7999
1956	.5125	1969	.8270
1957	.5341	1970	.8454
1958	.5293	1971	.8735
1959	.5580	1972	.9255
1960	.5720	1973	.9700
1961	.5836	1974	.9584
1962	.6093	1975	.9732

Projected Data

	S C E N A R I O				
	A	B	C	D	R
1976	.9685	.9685	.9685	.9685	.9686
1977	1.0094	1.0289	1.0289	1.0094	1.0287
1978	1.0417	1.0782	1.0782	1.0417	1.0740
1979	1.0721	1.1288	1.1288	1.0685	1.1148
1980	1.0995	1.1812	1.1812	1.0965	1.1617
1981	1.1239	1.2330	1.2318	1.1251	1.2056
1982	1.1477	1.2872	1.2848	1.1532	1.2482
1983	1.1702	1.3439	1.3396	1.1806	1.2915
1984	1.1916	1.4030	1.3981	1.2068	1.3372
1985	1.2086	1.4651	1.4578	1.2287	1.3841
1986	1.2245	1.5352	1.5249	1.2482	1.4298
1987	1.2379	1.6089	1.5955	1.2671	1.4767
1988	1.2500	1.6863	1.6687	1.2866	1.5261
1989	1.2628	1.7710	1.7491	1.3055	1.5766
1990	1.2750	1.8594	1.8332	1.3250	1.6236
1991	1.2878	1.9526	1.9209	1.3451	1.6723
1992	1.3012	2.0544	2.0172	1.3652	1.7229
1993	1.3140	2.1610	2.1183	1.3859	1.7747
1994	1.3274	2.2737	2.2237	1.4054	1.8277
1995	1.3378	2.3919	2.3352	1.4237	1.8825
1996	1.3488	2.5162	2.4522	1.4420	1.9392
1997	1.3591	2.6472	2.5747	1.4609	1.9971
1998	1.3701	2.7849	2.7039	1.4785	2.0574
1999	1.3811	2.9299	2.8392	1.4962	2.1189
2000	1.3920	3.0823	2.9811	1.5139	2.1823

FIGURE 10. INDEX OF INDUSTRIAL PRODUCTION (1967 = 100)



SOURCE OF HISTORICAL DATA: U.S. Bureau of Economic Analysis, Business Statistics, 1975 (Washington, D.C.: Government Printing Office, May 1976), p. 17; Survey of Current Business, Vol. 56, No. 7 (July 1976), p. S-4. (Ultimate source: U.S. Board of Governors of the Federal Reserve System.)

Table 10

INDEX OF INDUSTRIAL PRODUCTION
Index (1967 = 100)

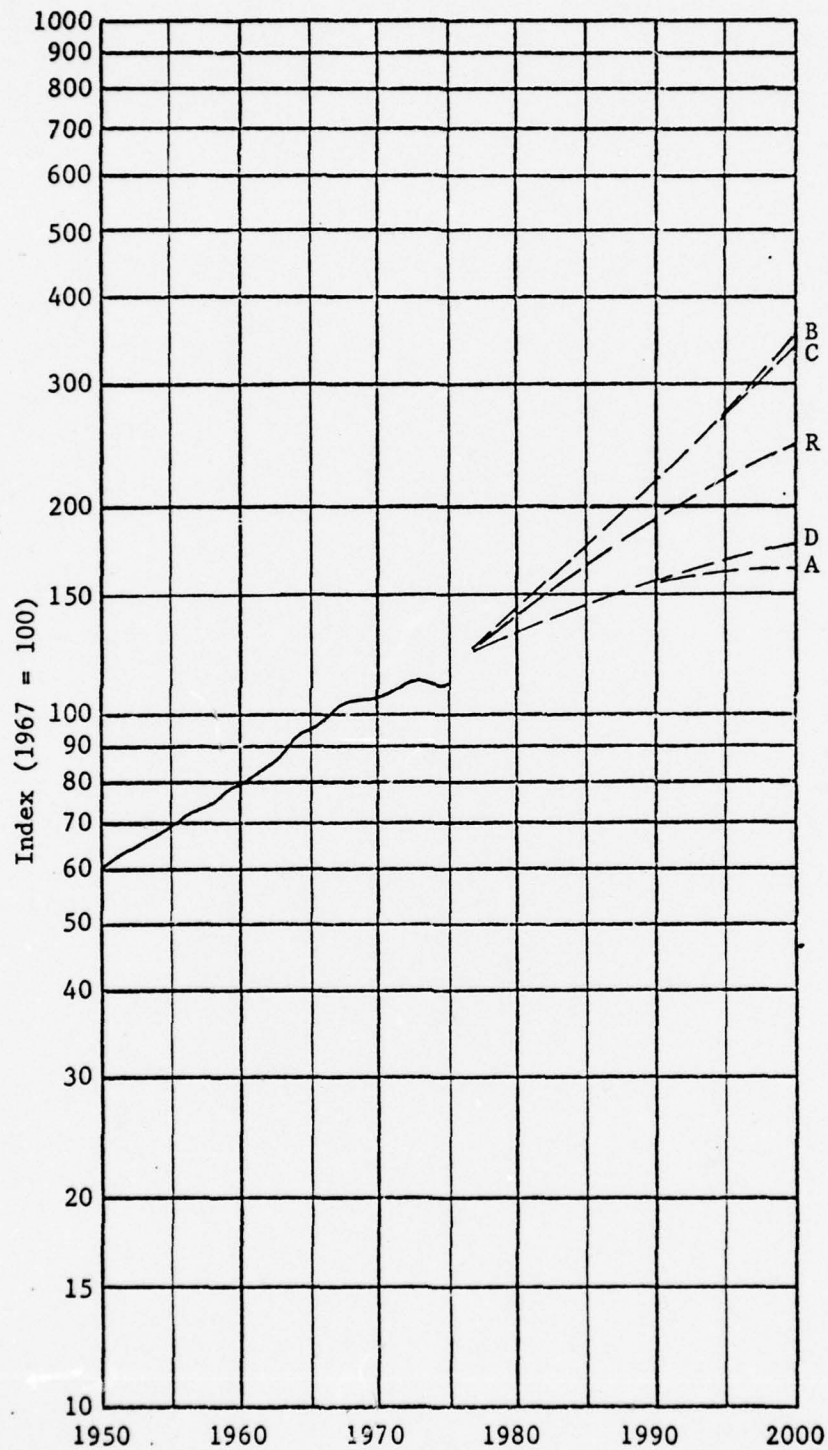
Historic Data

1950	44.90	1963	76.50
1951	48.70	1964	81.70
1952	50.60	1965	89.20
1953	54.80	1966	97.90
1954	51.90	1967	100.00
1955	58.50	1968	105.70
1956	61.10	1969	110.70
1957	61.90	1970	106.60
1958	57.90	1971	106.80
1959	64.80	1972	115.20
1960	66.20	1973	125.60
1961	66.70	1974	124.80
1962	72.20	1975	113.80

Projected Data

	S C E N A R I O				
	A	B	C	D	R
1976	126.76	126.76	126.76	126.76	126.77
1977	132.84	135.74	135.74	132.84	135.72
1978	137.47	143.33	143.26	137.53	142.49
1979	141.63	151.42	151.18	141.28	148.66
1980	145.66	159.95	159.49	145.49	155.82
1981	149.10	168.11	167.25	149.36	162.32
1982	152.65	176.09	174.95	152.93	168.44
1983	156.35	184.23	182.81	156.59	174.66
1984	159.49	192.64	191.21	159.79	181.22
1985	162.10	201.93	200.13	162.77	188.12
1986	164.57	212.76	210.46	165.75	195.02
1987	166.66	224.15	203.21	168.62	202.11
1988	168.57	236.08	232.53	171.60	209.56
1989	170.58	249.16	244.90	174.49	217.21
1990	172.49	262.83	257.84	177.47	224.34
1991	174.51	277.26	271.37	180.56	231.75
1992	176.55	292.93	286.18	183.64	239.41
1993	178.44	309.12	301.62	186.75	247.20
1994	180.41	326.15	317.59	189.55	255.12
1995	181.96	343.83	334.42	192.06	263.35
1996	183.59	362.46	352.11	194.46	271.82
1997	185.13	382.20	370.71	196.95	280.48
1998	186.78	403.05	390.37	199.28	289.52
1999	188.42	425.03	410.97	201.62	298.76
2000	190.05	448.14	432.61	203.95	308.25

FIGURE 11. OUTPUT PER MAN-HOUR OF ALL PERSONS IN THE PRIVATE BUSINESS SECTOR



SOURCE OF HISTORICAL DATA: U.S. Bureau of Labor Statistics, Monthly Labor Review, Vol. 99, No. 9 (September 1976), Table 31, p. 103.

Table 11

OUTPUT PER MAN-HOUR OF ALL PERSONS IN THE PRIVATE BUSINESS SECTOR
Index (1967 = 100)

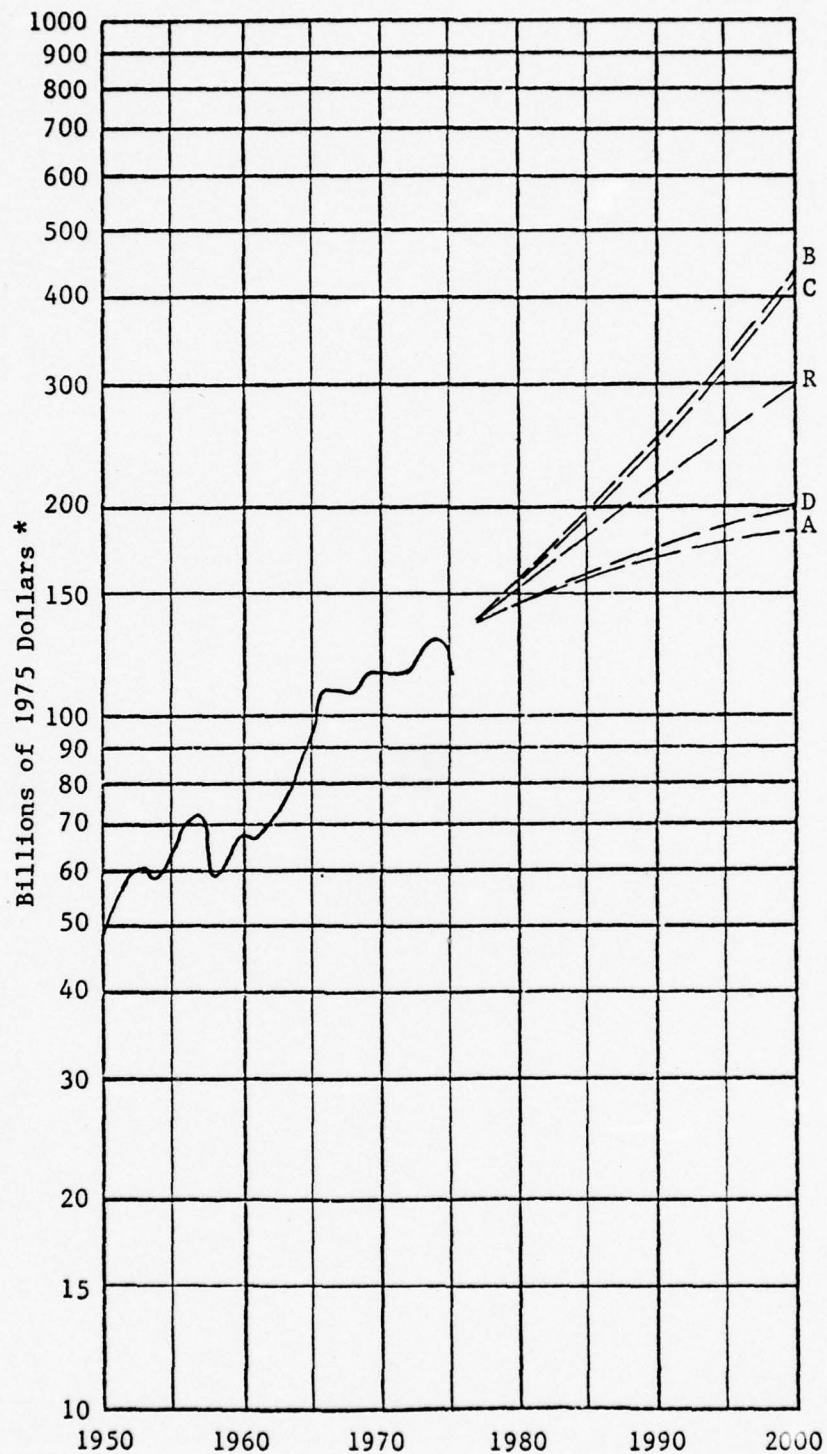
Historic Data

1950	59.70	1963	87.50
1951	61.30	1964	91.40
1952	63.20	1965	94.50
1953	65.50	1966	97.60
1954	66.70	1967	100.00
1955	69.30	1968	103.20
1956	70.20	1969	103.40
1957	72.10	1970	104.20
1958	74.50	1971	107.60
1959	77.20	1972	110.90
1960	78.40	1973	113.00
1961	81.00	1974	109.20
1962	84.30	1975	110.20

Projected Data

	S C E N A R I O				
	A	B	C	D	R
1976	118.23	118.23	118.23	118.23	118.24
1977	122.50	124.54	124.54	122.30	124.53
1978	125.71	129.84	129.78	125.77	129.29
1979	128.56	135.44	135.23	128.33	133.71
1980	131.30	141.49	141.04	131.30	139.10
1981	133.94	147.54	146.65	134.46	144.36
1982	136.73	153.71	152.45	137.61	149.57
1983	139.63	159.88	158.39	140.74	154.75
1984	142.18	166.01	164.59	143.43	159.94
1985	144.07	172.37	171.01	145.48	165.12
1986	145.81	179.45	178.30	147.28	169.98
1987	147.25	186.94	185.97	149.02	174.79
1988	148.55	194.95	193.95	150.92	179.78
1989	149.93	203.89	202.78	152.87	184.80
1990	151.24	213.33	212.04	155.00	189.45
1991	152.61	223.47	221.73	157.30	194.38
1992	154.01	234.60	232.30	159.59	199.47
1993	155.31	246.36	243.31	161.90	204.79
1994	156.62	258.83	254.67	164.03	210.33
1995	157.58	271.89	266.56	165.95	216.18
1996	158.55	285.65	278.90	167.79	212.21
1997	159.52	299.99	291.83	169.67	228.63
1998	160.59	314.99	305.48	171.41	235.16
1999	161.71	330.60	319.76	173.11	241.82
2000	162.88	347.10	334.79	174.79	248.64

FIGURE 12. BUSINESS EXPENDITURES ON NEW PLANT AND EQUIPMENT



SOURCE OF HISTORICAL DATA: U.S. Bureau of Economic Analysis, Business Statistics, 1975 (Washington, D.C.: U.S. Government Printing Office, May 1976), p. 10; Survey of Current Business, Vol. 56, No. 7 (July 1976), p. S-2. (Ultimate source: U.S. Board of Governors of the Federal Reserve System.)

*Adjusted by the implicit price deflator for gross private domestic investment.

Table 12

BUSINESS EXPENDITURES ON NEW PLANT AND EQUIPMENT
(Billions of 1975 Dollars)*

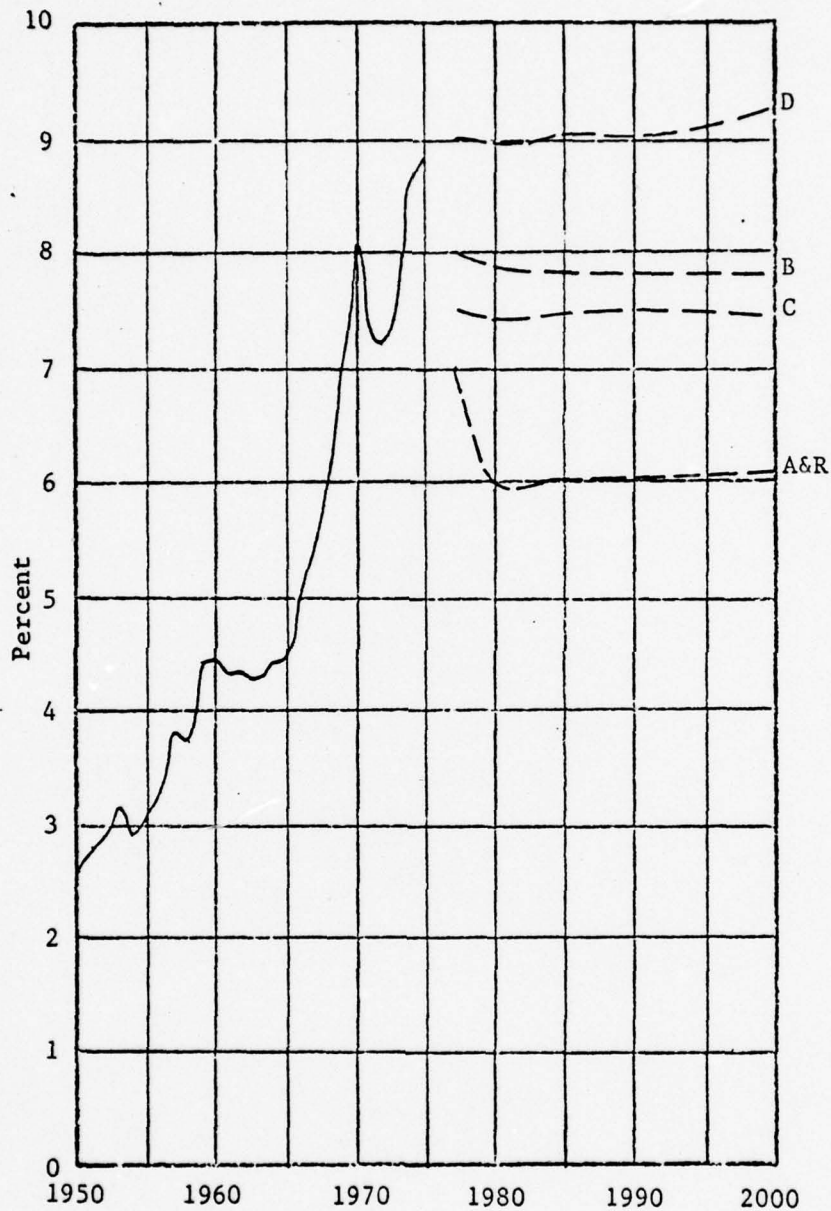
Historic Data

1950	49.30	1963	74.00
1951	57.30	1964	84.50
1952	58.30	1965	96.60
1953	61.20	1966	109.50
1954	58.60	1967	109.30
1955	62.40	1968	108.60
1956	70.60	1969	115.40
1957	71.00	1970	115.50
1958	59.80	1971	111.40
1959	61.60	1972	116.90
1960	67.40	1973	126.80
1961	66.10	1974	128.20
1962	70.30	1975	113.50

Projected Data

	S C E N A R I O				
	A	B	C	D	R
1976	129.11	129.11	129.11	129.11	129.12
1977	134.84	137.58	137.58	134.84	137.56
1978	139.25	144.46	144.38	138.94	143.73
1979	143.30	151.47	151.23	141.82	149.09
1980	146.90	158.98	158.47	144.93	155.38
1981	150.08	166.35	165.43	148.19	161.27
1982	153.25	174.19	172.87	151.81	167.21
1983	156.38	182.59	180.73	155.80	173.46
1984	159.38	191.27	189.02	159.56	180.05
1985	161.74	200.37	197.49	162.68	186.76
1986	163.92	210.59	207.01	165.39	193.18
1987	165.73	221.29	217.03	167.97	199.71
1988	167.36	232.53	227.37	170.58	206.50
1989	169.08	244.82	238.74	173.10	213.38
1990	170.71	257.66	250.63	175.71	219.77
1991	172.41	271.21	263.03	178.39	226.44
1992	174.20	285.77	276.60	181.01	233.43
1993	175.89	300.79	290.84	183.66	240.64
1994	177.67	316.43	305.65	186.27	248.05
1995	179.04	333.00	321.32	188.74	255.77
1996	180.53	350.59	337.78	191.21	263.82
1997	181.93	369.14	354.99	193.71	272.05
1998	183.39	388.68	373.14	196.02	280.63
1999	184.85	409.32	392.13	198.28	289.40
2000	186.32	431.01	412.09	200.54	298.41

FIGURE 13. AAA BOND YIELDS



SOURCE OF HISTORICAL DATA: U.S. Bureau of Economic Analysis, Business Statistics, 1975 (Washington, D.C.: U.S. Government Printing Office, May 1976), p.105; Survey of Current Business, Vol. 56, No. 7 (July 1976), p. S-21. (Ultimate source: U.S. Board of Governors of the Federal Reserve System.)

Table 13

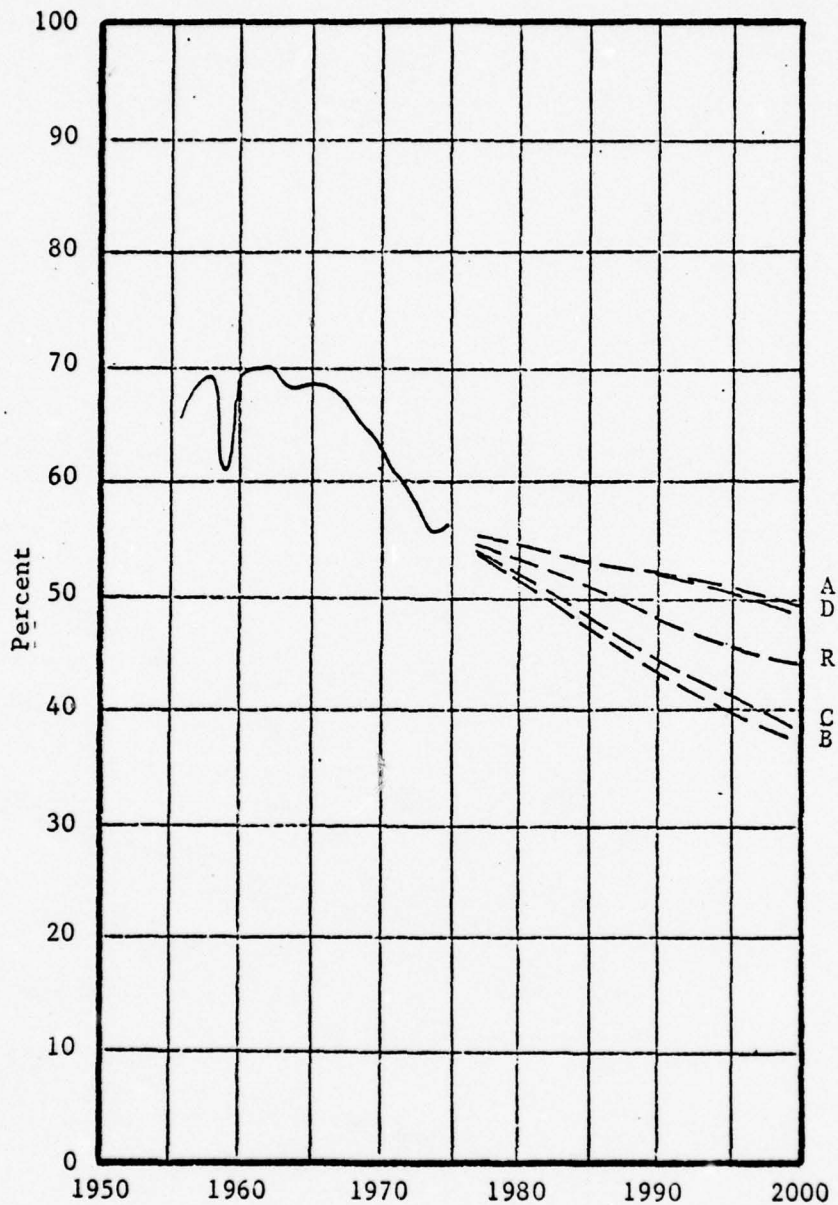
AAA BOND YIELDS
(Percent)Historic Data

1950	2.62	1963	4.26
1951	2.86	1964	4.40
1952	2.96	1965	4.49
1953	3.20	1966	5.13
1954	2.90	1967	5.51
1955	3.06	1968	6.18
1956	3.36	1969	7.03
1957	3.89	1970	8.04
1958	3.79	1971	7.39
1959	4.38	1972	7.21
1960	4.41	1973	7.44
1961	4.35	1974	8.57
1962	4.33	1975	8.83

Projected Data

	S C E N A R I O				
	A	B	C	D	R
1976	8.00	8.00	8.00	8.80	8.00
1977	7.00	8.00	7.50	9.00	7.00
1978	5.99	7.97	7.48	8.99	5.99
1979	5.97	7.91	7.45	8.97	5.98
1980	5.96	7.86	7.43	8.96	5.97
1981	5.95	7.82	7.41	8.96	5.97
1982	5.95	7.82	7.42	8.98	5.98
1983	5.98	7.84	7.45	9.03	5.99
1984	6.01	7.85	7.47	9.05	6.00
1985	6.02	7.85	7.48	9.06	6.00
1986	6.03	7.84	7.49	9.06	6.00
1987	6.03	7.83	7.49	9.04	6.00
1988	6.03	7.82	7.50	9.04	6.01
1989	6.03	7.81	7.50	9.03	6.01
1990	6.03	7.81	7.50	9.03	6.01
1991	6.04	7.80	7.51	9.04	6.01
1992	6.04	7.80	7.51	9.05	6.01
1993	6.04	7.80	7.51	9.08	6.01
1994	6.04	7.80	7.50	9.12	6.01
1995	6.04	7.80	7.49	9.15	6.01
1996	6.04	7.80	7.49	9.18	6.01
1997	6.04	7.80	7.49	9.20	6.01
1998	6.04	7.80	7.48	9.22	6.01
1999	6.04	7.80	7.48	9.24	6.01
2000	6.04	7.80	7.48	9.25	6.01

FIGURE 14. CORPORATE INVESTMENT FUNDS FROM INTERNAL SOURCES AS A PERCENTAGE OF FUNDS FROM ALL SOURCES



SOURCE OF HISTORICAL DATA: U.S. President, Economic Report of the President; Transmitted to the Congress January 1976 (Washington, D.C.: U.S. Government Printing Office, 1976), Table B-78, p.263; with telephoned update. (Ultimate source: U.S. Board of Governors of the Federal Reserve.)

Table 14

CORPORATE INVESTMENT FUNDS FROM INTERNAL SOURCES
AS A PERCENTAGE OF FUNDS FROM ALL SOURCES
(Percent)

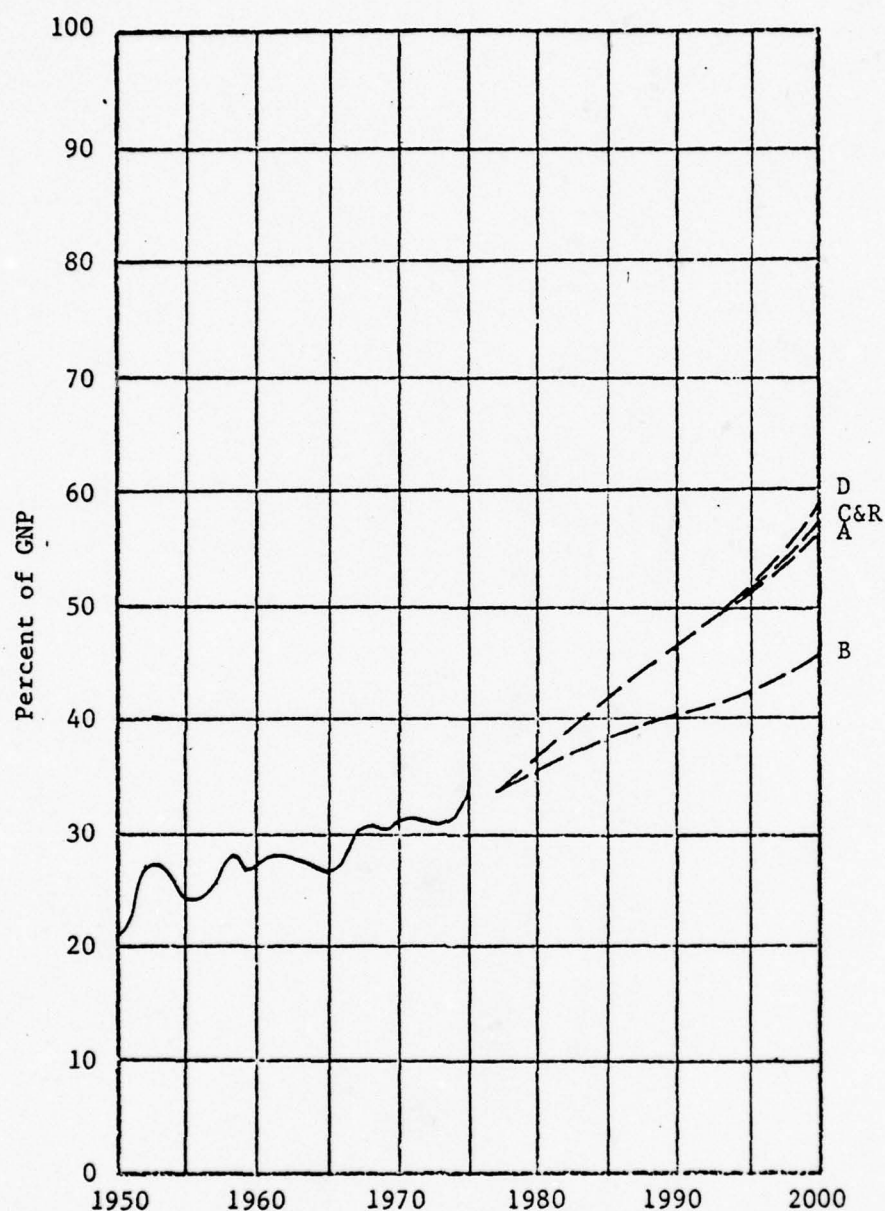
Historic Data

1956	66.00	1966	68.10
1957	68.90	1967	67.30
1958	69.50	1968	65.50
1959	61.20	1969	64.20
1960	69.00	1970	62.60
1961	70.00	1971	61.70
1962	70.00	1972	60.00
1963	69.00	1973	57.90
1964	68.00	1974	55.30
1965	68.30	1975	56.20

Projected Data

	S C E N A R I O				
	A	B	C	D	R
1976	55.90	55.20	55.30	55.90	55.60
1977	55.60	54.30	54.40	55.50	55.10
1978	55.39	53.51	53.57	55.27	54.53
1979	55.07	52.84	52.93	55.12	54.11
1980	54.81	52.19	52.21	54.95	53.62
1981	54.58	51.55	51.58	54.93	53.26
1982	54.45	50.68	50.76	54.73	52.79
1983	54.24	49.78	49.87	54.46	52.29
1984	53.98	48.84	48.99	54.01	51.66
1985	53.67	47.78	48.10	53.60	51.10
1986	53.48	46.92	47.45	53.30	50.61
1987	53.18	46.10	46.71	53.01	50.13
1988	52.99	45.39	46.06	52.72	49.65
1989	52.70	44.60	45.30	52.44	48.68
1990	52.41	43.80	44.63	52.06	48.29
1991	52.22	43.11	43.93	51.77	47.80
1992	51.93	42.42	43.24	51.50	47.31
1993	51.73	41.75	42.54	51.24	46.83
1994	51.41	41.07	41.94	50.98	46.45
1995	51.10	40.48	41.22	50.73	45.98
1996	50.90	39.70	40.52	50.46	45.60
1997	50.59	39.01	39.92	50.18	45.12
1998	50.40	38.42	39.32	49.91	44.74
1999	50.10	37.73	38.72	49.64	44.25
2000	49.91	37.13	38.12	49.37	43.95

FIGURE 15. TOTAL GOVERNMENT EXPENDITURES (FEDERAL, STATE, AND LOCAL)
AS A PERCENTAGE OF GNP



SOURCE OF HISTORICAL DATA: Total government expenditures: U.S. Bureau of Economic Analysis, Survey of Current Business, Vol. 56, No. 1 (January 1976), Part II, Table 3.2, pp. 52-3, and Table 3.4, pp. 58-9; Vol. 56, No. 7 (July 1976), Table 3.1, p. 36; GNP: U.S. Bureau of Economic Analysis, Business Statistics, 1975 (Washington, D.C.: U.S. Government Printing Office, May 1976), p. 1; Survey of Current Business, Vol. 56, No. 7 (July 1976), Table 1.1, p. 24.

Table 15

TOTAL GOVERNMENT EXPENDITURES (FEDERAL, STATE, AND LOCAL)
AS A PERCENTAGE OF GNP
(Percent of GNP)

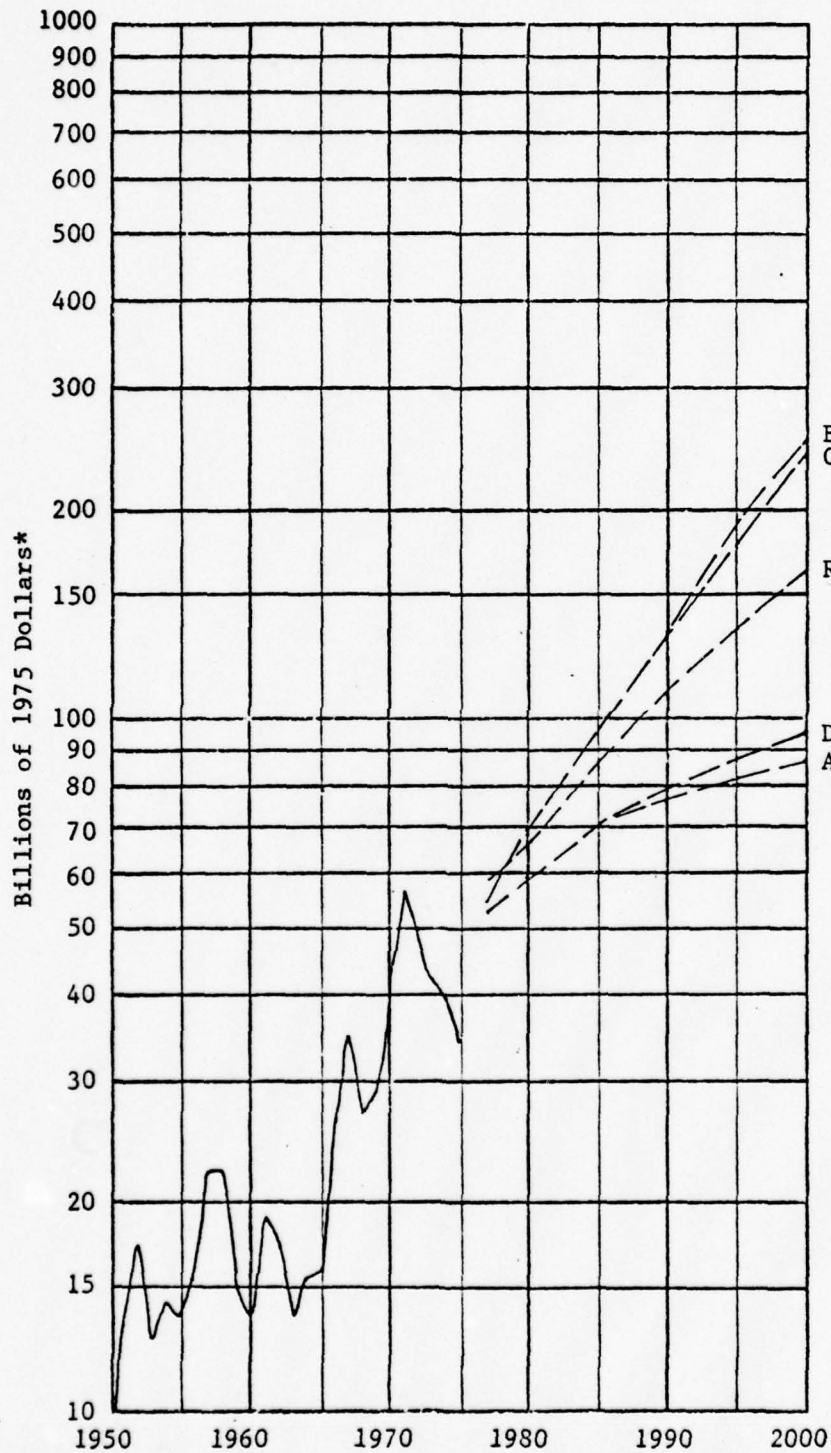
Historic Data

1950	21.31	1963	28.21
1951	23.98	1964	27.73
1952	27.04	1965	27.30
1953	27.73	1966	28.36
1954	26.49	1967	30.44
1955	24.53	1968	30.96
1956	24.83	1969	30.53
1957	26.03	1970	31.75
1958	28.42	1971	32.02
1959	26.93	1972	31.64
1960	26.96	1973	30.99
1961	28.49	1974	32.47
1962	28.46	1975	35.01

Projected Data

	S C E N A R I O				
	A	B	C	D	R
1976	33.50	33.50	33.50	33.50	33.50
1977	34.10	34.10	34.10	34.10	34.10
1978	34.92	34.66	34.80	34.90	34.87
1979	36.16	35.36	35.79	36.10	36.00
1980	37.30	35.93	36.78	37.22	37.14
1981	38.42	36.51	37.85	38.33	38.32
1982	39.31	36.94	38.87	39.28	39.36
1983	39.95	37.30	39.83	40.04	40.23
1984	40.66	37.62	40.77	40.89	41.06
1985	41.49	37.95	41.73	41.85	41.91
1986	42.33	38.27	42.72	42.81	42.77
1987	43.22	38.62	43.75	43.79	43.70
1988	44.23	39.07	44.91	44.89	44.76
1989	45.16	39.43	46.00	45.88	45.75
1990	46.20	39.90	47.22	46.99	46.86
1991	47.14	40.27	48.36	47.97	47.86
1992	48.15	40.77	49.51	49.01	48.91
1993	49.12	41.27	50.57	49.98	49.91
1994	50.07	41.80	51.58	50.90	50.87
1995	51.04	42.39	52.60	51.87	51.87
1996	52.13	43.11	53.74	52.99	53.03
1997	53.12	43.72	54.78	54.04	54.07
1998	54.11	44.32	55.82	55.10	55.11
1999	55.24	45.00	57.00	56.29	56.27
2000	56.37	45.66	58.19	57.49	57.43

FIGURE 16. LONG-TERM FUNDS RAISED IN CREDIT MARKETS



SOURCE OF HISTORICAL DATA: U.S. President, Economic Report of the President; Transmitted to Congress January 1976 (Washington, D.C.: U.S. Government Printing Office, 1976), Table B-78, p. 263; with telephoned update. (Ultimate source: U.S. Board of Governors of the Federal Reserve Systems.)

Table 16

LONG-TERM FUNDS RAISED IN CREDIT MARKETS
(Billions of 1975 Dollars*)

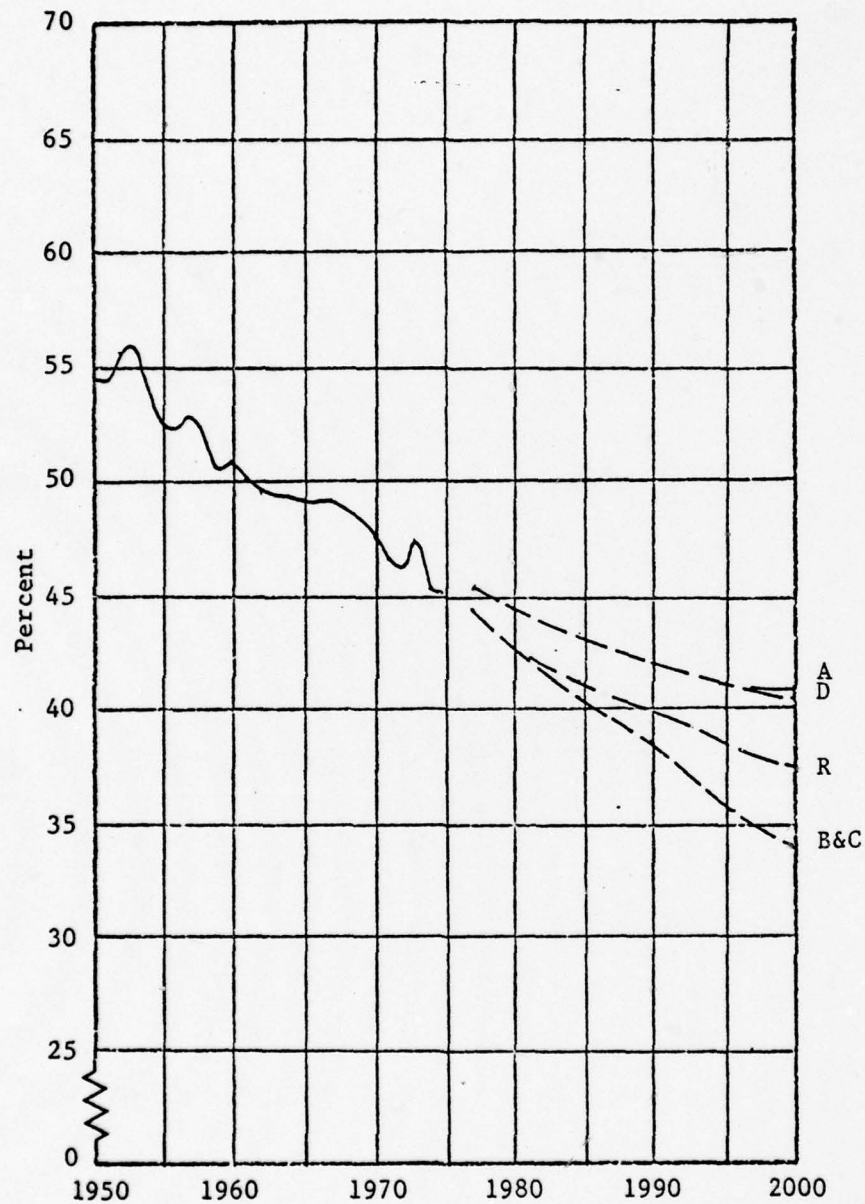
Historic Data

1950	9.00	1963	14.80
1951	13.10	1964	15.40
1952	17.10	1965	15.80
1953	12.80	1966	26.00
1954	14.10	1967	34.80
1955	13.60	1968	28.40
1956	15.20	1969	29.30
1957	20.20	1970	42.80
1958	20.20	1971	55.40
1959	15.30	1972	50.00
1960	13.90	1973	41.50
1961	19.80	1974	39.70
1962	17.10	1975	34.00

Projected Data

	S C E N A R I O				
	A	B	C	D	R
1976	48.56	48.56	48.56	48.56	48.56
1977	52.42	54.26	54.26	52.42	54.25
1978	55.29	58.74	58.74	55.10	58.37
1979	57.78	63.12	63.12	56.83	61.91
1980	59.97	67.66	67.61	58.54	65.95
1981	61.91	72.41	72.08	60.42	69.78
1982	64.09	77.65	77.06	62.77	73.67
1983	66.40	83.37	82.45	65.55	77.81
1984	68.63	89.35	88.28	68.39	82.29
1985	70.43	95.43	94.08	70.77	86.86
1986	72.02	102.10	100.39	72.73	91.25
1987	73.35	109.13	107.03	74.58	95.71
1988	74.53	116.47	113.86	76.41	100.38
1989	75.73	124.51	121.34	78.09	105.10
1990	76.87	132.97	129.23	79.85	109.51
1991	78.07	141.89	137.46	81.66	114.08
1992	79.32	151.62	146.49	83.39	118.81
1993	80.50	161.77	155.95	85.12	123.65
1994	81.74	172.49	165.80	86.66	128.57
1995	82.69	183.56	176.19	88.11	133.64
1996	83.71	195.27	187.12	89.57	138.88
1997	84.66	207.64	198.57	91.11	144.22
1998	85.68	220.66	210.63	92.55	149.81
1999	86.70	234.40	223.27	94.00	155.51
2000	87.72	248.88	236.55	95.45	161.39

FIGURE 17. FINAL SALES OF GOODS AS A PERCENTAGE OF TOTAL FINAL SALES



SOURCE OF HISTORICAL DATA: U.S. Bureau of Economic Analysis, Business Statistics, 1975 (Washington, D.C.: U.S. Government Printing Office, May 1976), p. 3; Survey of Current Business, Vol. 56, No. 7 (July 1976), p. S-1.

Table 17

FINAL SALES OF GOODS AS A PERCENTAGE OF TOTAL FINAL SALES
(Percent)

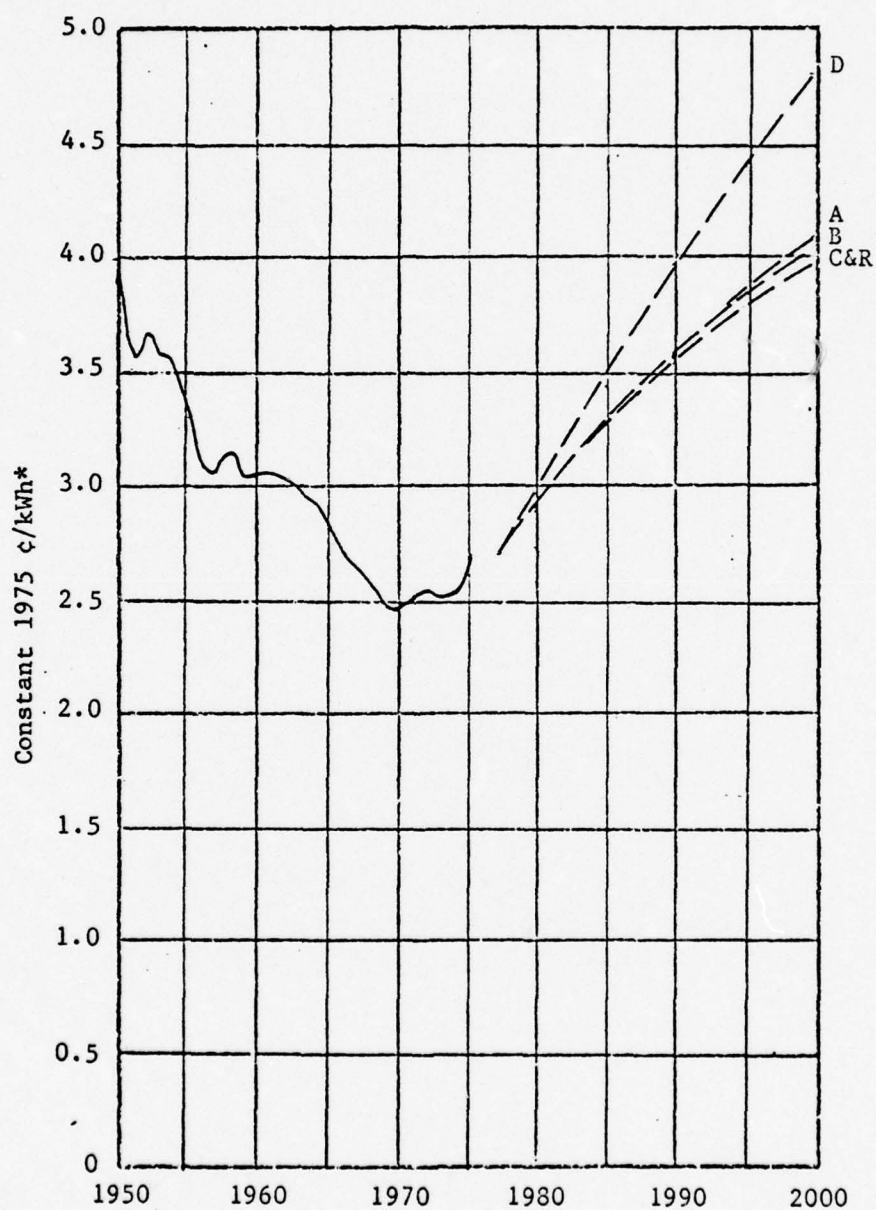
Historic Data

1950	54.60	1963	49.50
1951	54.60	1964	49.50
1952	55.70	1965	49.30
1953	55.80	1966	49.10
1954	54.40	1967	49.20
1955	52.80	1968	48.80
1956	52.60	1969	48.30
1957	52.90	1970	47.70
1958	51.90	1971	46.50
1959	50.50	1972	46.30
1960	50.80	1973	48.00
1961	50.00	1974	45.30
1962	49.70	1975	45.20

Projected Data

	S C E N A R I O				
	A	B	C	D	R
1976	45.00	44.70	44.70	45.00	44.90
1977	45.90	44.20	44.30	44.90	44.50
1978	44.67	43.69	43.88	44.67	44.17
1979	44.51	43.17	43.35	44.40	43.82
1980	44.23	42.74	42.91	44.11	43.44
1981	44.01	42.19	42.44	43.87	42.93
1982	43.81	41.65	41.89	43.56	42.55
1983	43.53	41.22	41.46	43.30	42.21
1984	43.38	40.70	41.05	43.20	41.90
1985	43.16	40.31	40.68	43.05	41.63
1986	43.03	39.83	40.30	42.90	41.33
1987	42.80	39.44	39.91	42.83	40.93
1988	42.64	38.94	42.28	42.64	40.60
1989	42.38	38.53	39.09	42.43	40.26
1990	42.21	38.11	38.67	42.31	39.90
1991	41.93	37.68	38.25	42.07	39.53
1992	41.78	37.16	37.83	41.95	39.18
1993	41.66	36.75	37.42	41.72	38.86
1994	41.46	36.35	37.02	41.50	38.65
1995	41.40	35.95	36.74	41.39	38.38
1996	41.27	35.56	36.36	41.19	38.13
1997	41.24	35.18	36.00	41.00	37.89
1998	41.11	34.79	35.72	40.81	37.65
1999	41.08	34.50	35.35	40.74	37.40
2000	41.05	34.11	35.08	40.66	37.15

FIGURE 18. AVERAGE REVENUES PER KILOWATT-HOUR, ALL SECTORS



SOURCE OF HISTORICAL DATA: Edison Electric Institute, Historical Statistics of the Electric Utility Industry Through 1970 (New York: Edison Electric Institute, 1974), Table 19, p. 60 and Table 33, p. 88; Statistical Year Book of the Electric Utility Industry for 1975 (New York: Edison Electric Institute, 1976), Table 19 S, p.31, and Table 33 S, p.43.

*Adjusted by Industrial Wholesale Price Index.

Table 18

AVERAGE REVENUES PER KILOWATT-HOUR, ALL SECTORS
(Constant 1975 cents/kw-hr*)

Historic Data

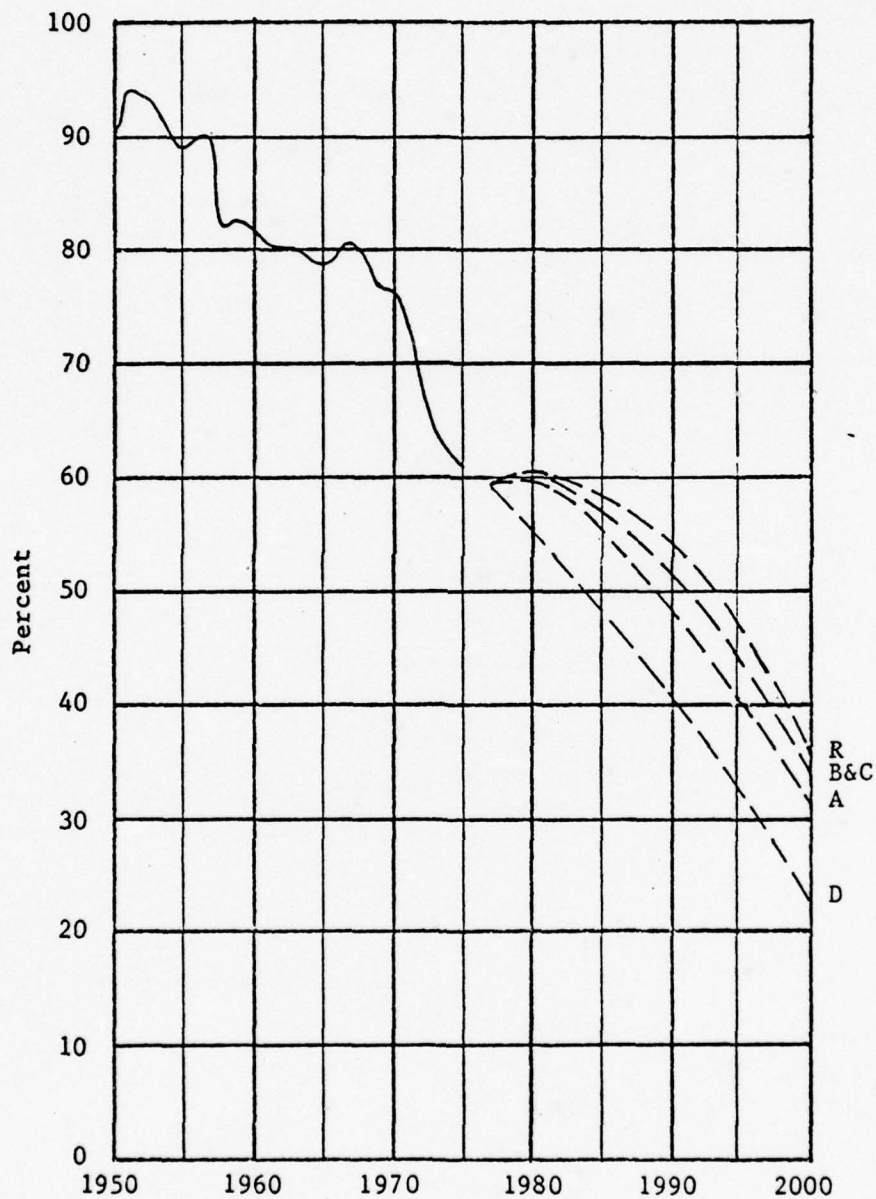
1950	4.00	1963	2.98
1951	3.54	1964	2.91
1952	3.65	1965	2.82
1953	3.58	1966	2.71
1954	3.57	1967	2.67
1955	3.27	1968	2.59
1956	3.09	1969	2.49
1957	3.05	1970	2.47
1958	3.13	1971	2.59
1959	3.04	1972	2.57
1960	3.04	1973	2.53
1961	3.05	1974	2.56
1962	3.03	1975	2.72

Projected Data

	S C E N A R I O				
	A	B	C	D	R
1976	2.69	2.69	2.69	2.69	2.69
1977	2.73	2.73	2.73	2.73	2.73
1978	2.78	2.78	2.78	2.77	2.78
1979	2.83	2.83	2.83	2.82	2.82
1980	2.89	2.89	2.89	2.88	2.89
1981	2.97	2.97	2.97	2.97	2.96
1982	3.04	3.05	3.05	3.07	3.03
1983	3.11	3.12	3.12	3.18	3.10
1984	3.19	3.20	3.20	3.30	3.18
1985	3.26	3.28	3.28	3.43	3.25
1986	3.33	3.35	3.34	3.55	3.31
1987	3.40	3.42	3.40	3.67	3.37
1988	3.47	3.48	3.46	3.78	3.43
1989	3.52	3.53	3.51	3.87	3.47
1990	3.59	3.59	3.56	3.98	3.52
1991	3.65	3.65	3.61	4.08	3.57
1992	3.70	3.70	3.65	4.16	3.61
1993	3.76	3.75	3.69	4.25	3.66
1994	3.81	3.80	3.74	4.34	3.71
1995	3.86	3.85	3.78	4.41	3.76
1996	3.90	3.88	3.81	4.48	3.79
1997	3.95	3.93	3.85	4.56	3.84
1998	4.01	3.98	3.90	4.65	3.89
1999	4.05	4.01	3.93	4.72	3.92
2000	4.11	4.06	3.97	4.81	3.97

*Adjusted by Industrial Wholesale Price Index.

FIGURE 19. RATIO OF DOMESTIC PRODUCTION OF CRUDE OIL, LEASE CONDENSATE, AND NATURAL GAS LIQUIDS TO DOMESTIC DEMAND FOR REFINED PRODUCTS



SOURCE OF HISTORICAL DATA: American Petroleum Institute, Basic Petroleum Data Book; Petroleum Industry Statistics (Washington, D.C.: American Petroleum Institute, 1975), Section VII, Table 3. (Calculated from U.S. Bureau of Mines data.)

Table 19

CAPITAL EXPENDITURES BY BUSINESS FOR AIR AND WATER POLLUTION ABATEMENT
(Billions of Constant 1975 Dollars*)

Historic Data

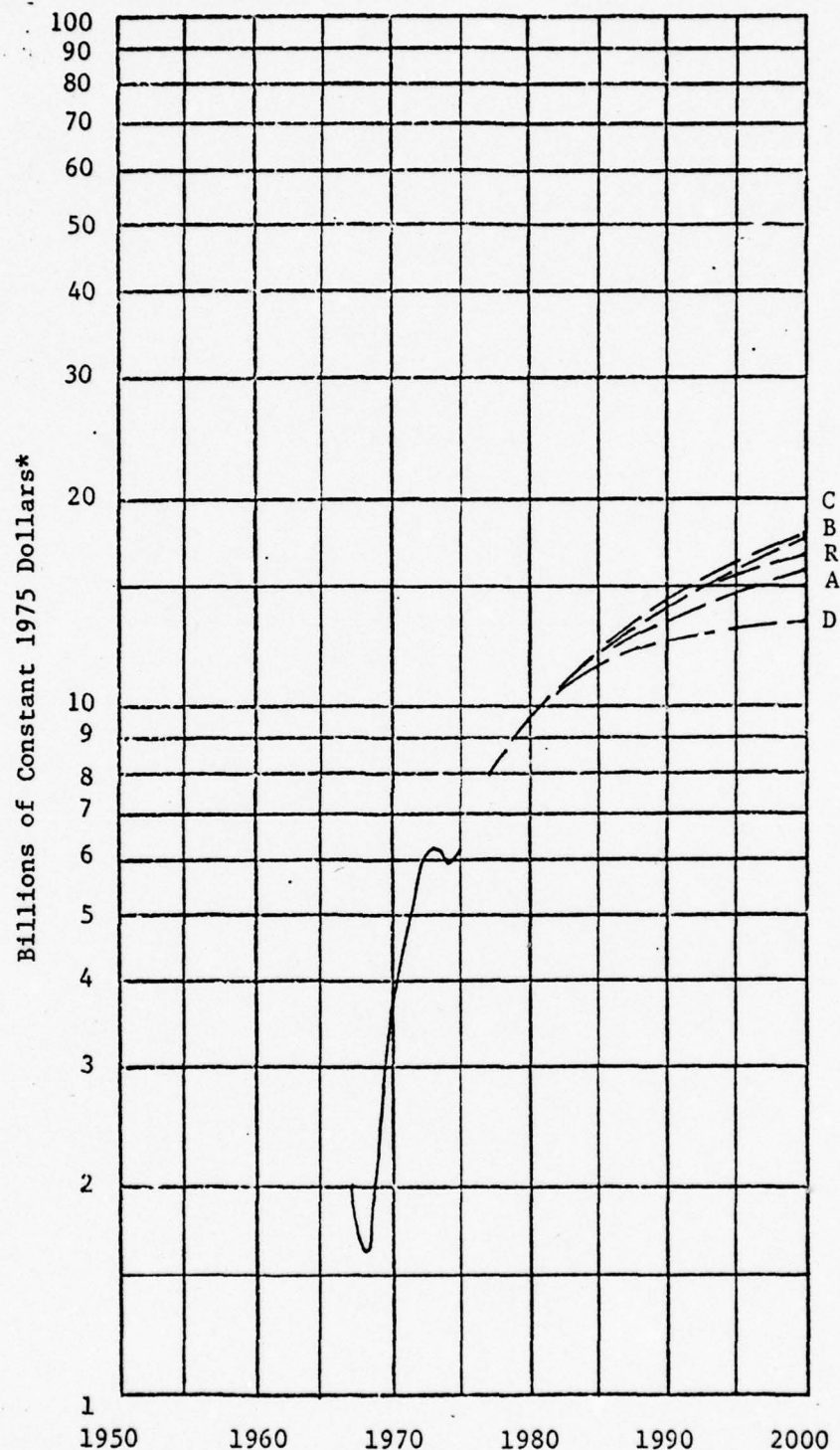
1967	2.00
1968	1.60
1969	2.40
1970	3.60
1971	4.50
1972	5.90
1973	6.20
1974	5.90
1975	6.20

Projected Data

	S C E N A R I O				
	A	B	C	D	R
1976	7.40	7.40	7.40	7.40	7.40
1977	7.97	7.97	7.97	7.97	7.97
1978	8.52	8.53	8.53	8.52	8.52
1979	9.05	9.06	9.07	9.05	9.07
1980	9.55	9.58	9.59	9.54	9.59
1981	10.05	10.09	10.11	10.03	10.13
1982	10.53	10.57	10.61	10.47	10.64
1983	10.97	11.03	11.09	10.86	11.13
1984	11.40	11.48	11.57	11.21	11.59
1985	11.78	11.91	12.02	11.50	12.02
1986	12.15	12.33	12.49	11.77	12.42
1987	12.48	12.75	12.94	11.99	12.80
1988	12.80	13.16	13.39	12.20	13.18
1989	13.10	13.56	13.82	12.37	13.53
1990	13.39	13.95	14.25	12.51	13.87
1991	13.66	14.33	14.66	12.62	14.19
1992	13.90	14.68	15.05	12.71	14.48
1993	14.13	15.04	15.44	12.79	14.76
1994	14.35	15.39	15.80	12.87	15.03
1995	14.56	15.75	16.16	12.94	15.31
1996	14.76	16.11	16.50	13.00	15.58
1997	14.97	16.46	16.83	13.06	15.85
1998	15.16	16.80	17.15	13.12	16.10
1999	15.36	17.14	17.47	13.17	16.35
2000	15.56	17.48	17.79	13.24	16.59

*Adjusted by implicit price deflator for non-residential fixed investment.

FIGURE 20. CAPITAL EXPENDITURES BY BUSINESS FOR AIR AND WATER POLLUTION ABATEMENT



SOURCE OF HISTORICAL DATA: McGraw-Hill Publications Co., Annual McGraw-Hill Survey of Pollution Control Expenditures (New York: McGraw-Hill Publications Co., 1973); John E. Creameans, Frank W. Segel, and Gary L. Rutledge, "Capital Expenditures by Business for Air, Water, and Solid Waste Pollution Abatement, 1974 and Planned 1975," Survey of Current Business, Vol. 55, No. 7 (July 1975), p. 15; Frank W. Segel and Gary L. Rutledge, "Capital Expenditures for Air, Water, and Solid Waste Pollution Abatement, 1975 and Planned 1976," Survey of Current Business, Vol. 56, No. 7 (July 1976), p. 14.

* Adjusted by implicit price deflator for non-residential fixed investment.

Table 20

RATIO OF DOMESTIC PRODUCTION OF CRUDE OIL, LEASE CONDENSATE,
AND NATURAL GAS LIQUIDS TO DOMESTIC DEMAND FOR REFINED PRODUCTS
(Percent)

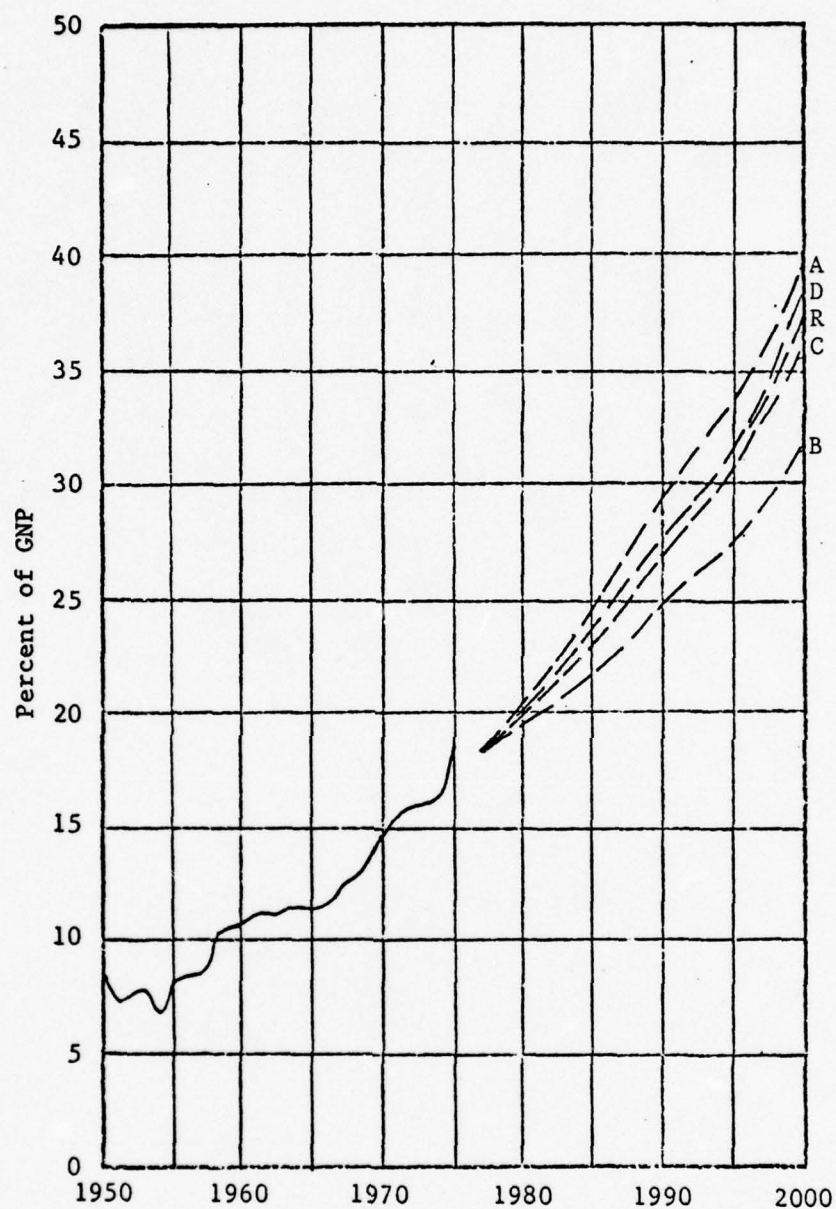
Historic Data

1950	.9008	1963	.8042
1951	.9510	1964	.7955
1952	.9419	1965	.7829
1953	.9348	1966	.7926
1954	.9020	1967	.8136
1955	.8953	1968	.7913
1956	.9052	1969	.7659
1957	.9038	1970	.7687
1958	.8244	1971	.7333
1959	.8326	1972	.6833
1960	.8128	1973	.6324
1961	.8193	1974	.6283
1962	.8031	1975	.6134

Projected Data

	S C E N A R I O				
	A	B	C	D	R
1976	.6104	.6104	.6104	.6104	.6104
1977	.5975	.5984	.5984	.5927	.5984
1978	.5913	.5928	.5933	.5764	.5940
1979	.5919	.5937	.5952	.5618	.5972
1980	.5982	.6005	.6051	.5489	.6067
1981	.5969	.5982	.6077	.5351	.6076
1982	.5880	.5888	.6032	.5155	.6014
1983	.5747	.5761	.5949	.4972	.5923
1984	.5586	.5620	.5824	.4807	.5820
1985	.5447	.5516	.5713	.4650	.5755
1986	.5321	.5447	.5622	.4543	.5717
1987	.5200	.5384	.5535	.4431	.5677
1988	.5081	.5327	.5451	.4315	.5634
1989	.4958	.5258	.5356	.4194	.5578
1990	.4830	.5178	.5251	.4069	.5494
1991	.4695	.5085	.5134	.3929	.5382
1992	.4551	.4974	.5002	.3774	.5245
1993	.4388	.4832	.4842	.3602	.5074
1994	.4208	.4660	.4659	.3417	.4881
1995	.4016	.4467	.4460	.3231	.4677
1996	.3827	.4259	.4254	.3050	.4461
1997	.3635	.4047	.4044	.2873	.4242
1998	.3444	.3833	.3834	.2701	.4024
1999	.3257	.3626	.3630	.2536	.3810
2000	.3077	.3427	.3433	.2379	.3603

FIGURE 21. TOTAL SOCIAL WELFARE EXPENDITURES UNDER PUBLIC PROGRAMS AS A PERCENTAGE OF GROSS NATIONAL PRODUCT



SOURCE OF HISTORICAL DATA: Social Welfare Expenditures: Alfred N. Skolnik and Sophie R. Dales, "Social Welfare Expenditures 1950-75," Social Security Bulletin, Vol. 39, No. 1 (January 1976), Table 1, pp. 6-8; GNP: U.S. Bureau of Economic Analysis, Business Statistics, 1975 (Washington, D.C.: U.S. Government Printing Office, May 1976), p. 1; Survey of Current Business, Vol. 56, No. 7 (July 1976), Table 1.1, p. 24.

Table 21

TOTAL SOCIAL WELFARE EXPENDITURES UNDER PUBLIC PROGRAMS
AS A PERCENTAGE OF GROSS NATIONAL PRODUCT
(Percent of GNP)

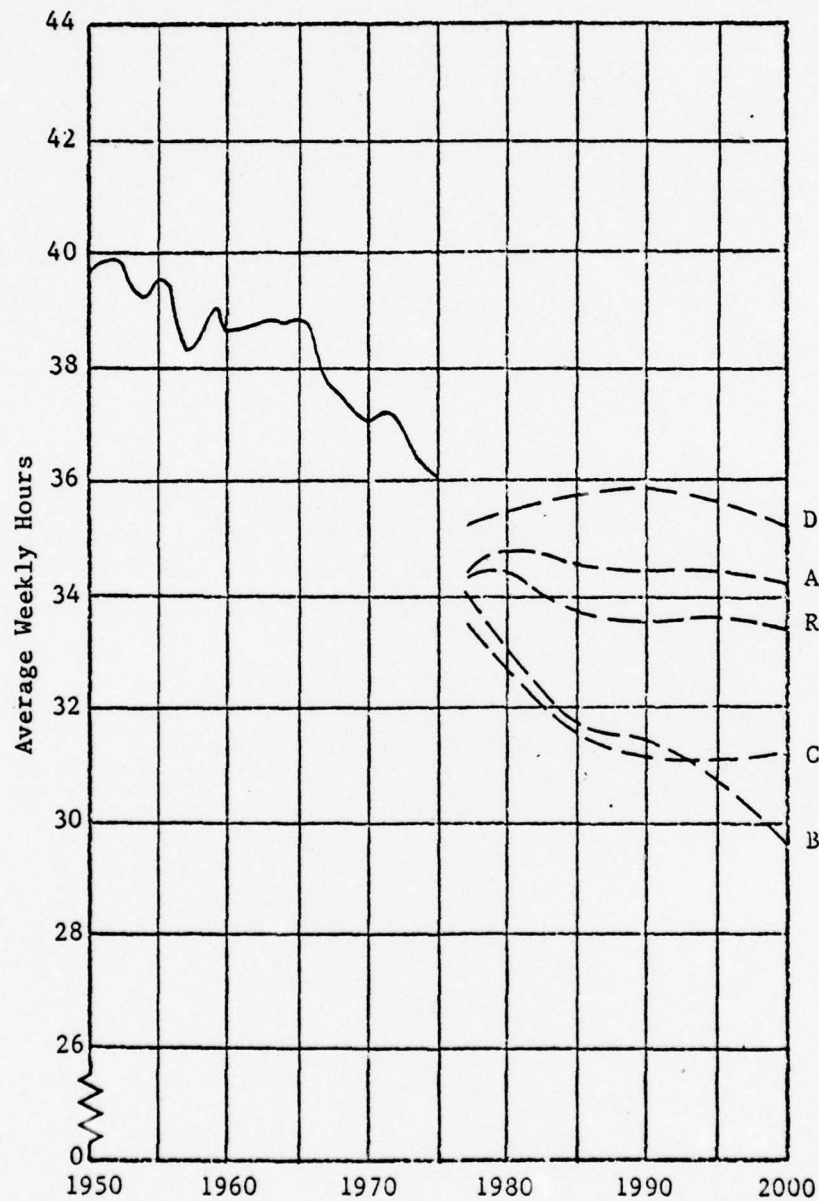
Historic Data

1950	8.21	1963	11.23
1951	7.28	1964	11.25
1952	7.37	1965	11.22
1953	7.39	1966	11.68
1954	6.70	1967	12.52
1955	8.17	1968	12.90
1956	8.35	1969	13.59
1957	8.89	1970	14.84
1958	10.13	1971	16.17
1959	10.24	1972	16.34
1960	10.33	1973	16.41
1961	11.13	1974	16.93
1962	11.11	1975	18.90

Projected Data

	S C E N A R I O				
	A	B	C	D	R
1976	17.60	17.60	17.60	17.60	17.60
1977	18.00	18.00	18.00	18.00	18.00
1978	18.70	18.57	18.59	18.67	18.64
1979	19.41	19.05	19.10	19.34	19.27
1980	20.26	19.53	19.63	20.12	19.97
1981	21.17	20.08	20.24	20.96	20.76
1982	21.91	20.49	20.79	21.59	21.43
1983	22.69	20.97	21.46	22.28	22.17
1984	23.41	21.44	22.17	22.90	22.86
1985	24.18	21.91	22.89	23.60	23.58
1986	25.14	22.48	23.75	24.50	24.45
1987	26.00	22.95	24.50	25.29	25.21
1988	26.98	23.52	25.36	26.20	26.10
1989	27.99	24.08	26.20	27.13	26.99
1990	29.00	24.64	27.05	28.06	27.89
1991	30.02	25.19	27.90	29.00	28.80
1992	31.00	25.75	28.71	29.93	29.68
1993	32.04	26.42	29.60	30.94	30.65
1994	33.04	27.11	30.45	31.92	31.59
1995	34.04	27.80	31.29	32.90	32.53
1996	35.02	28.51	32.12	33.85	33.46
1997	36.14	29.32	33.06	34.92	34.52
1998	37.28	30.11	34.01	36.01	35.58
1999	38.44	30.89	34.98	37.10	36.66
2000	39.61	31.67	35.95	38.20	37.75

FIGURE 22. AVERAGE WEEKLY HOURS OF PRODUCTION WORKERS ON PRIVATE NON-AGRICULTURAL PAYROLLS



SOURCE OF HISTORICAL DATA: U.S. Bureau of Labor Statistics, Handbook of Labor Statistics 1975--Reference Edition, Bulletin 1865 (Washington, D.C.: U.S. Government Printing Office, 1975), Table 78, p. 176; Employment and Earnings, Vol. 23, No. 3 (September 1976), Table C-1, p. 81.

Table 22

AVERAGE WEEKLY HOURS OF PRODUCTION WORKERS
ON PRIVATE NON-AGRICULTURAL PAYROLLS
(Average Weekly Hours)

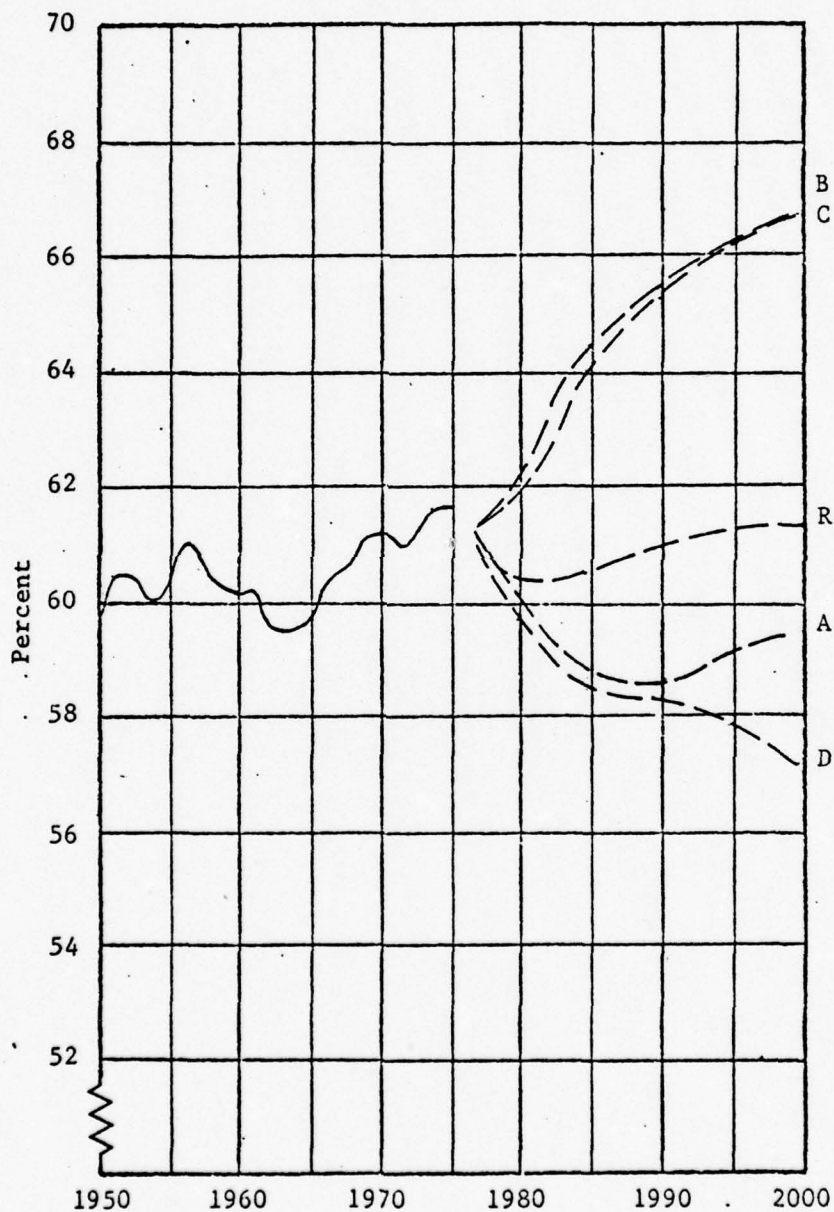
Historic Data

1950	39.80	1963	38.80
1951	39.90	1964	38.70
1952	39.90	1965	38.80
1953	39.60	1966	38.60
1954	39.10	1967	38.00
1955	39.60	1968	37.80
1956	39.30	1969	37.70
1957	38.30	1970	37.10
1958	38.50	1971	37.00
1959	39.00	1972	37.10
1960	38.60	1973	37.10
1961	38.60	1974	36.60
1962	38.70	1975	36.10

Projected Data

	S C E N A R I O				
	A	B	C	D	R
1976	34.39	34.02	33.66	35.14	34.20
1977	34.38	34.13	34.26	35.24	34.38
1978	34.35	33.85	34.61	35.19	34.37
1979	34.49	33.49	33.23	35.29	34.33
1980	34.92	33.06	32.97	35.56	34.37
1981	34.82	32.64	32.67	35.74	34.39
1982	34.88	32.22	33.32	35.86	34.25
1983	34.83	32.00	32.10	35.93	34.16
1984	34.74	31.80	31.86	35.85	34.01
1985	34.59	31.68	31.63	35.84	33.87
1986	34.52	31.68	31.53	35.90	33.81
1987	34.45	31.61	31.36	35.84	33.69
1988	34.43	31.64	31.42	35.89	33.71
1989	34.49	31.73	31.28	36.01	33.79
1990	34.49	31.59	31.11	35.93	33.69
1991	34.47	31.59	31.09	35.94	33.69
1992	34.53	31.52	31.14	35.89	33.79
1993	34.51	31.35	31.19	35.83	33.76
1994	34.42	31.15	31.21	35.75	33.72
1995	34.48	30.94	31.23	35.66	33.70
1996	34.55	30.78	31.04	35.68	33.75
1997	34.56	30.54	31.31	35.52	33.70
1998	34.51	30.27	31.27	35.46	33.62
1999	34.54	30.21	31.37	35.37	33.63
2000	34.35	29.78	31.27	35.15	33.45

FIGURE 23. TOTAL LABOR FORCE PARTICIPATION RATE (NUMBER OF PERSONS 16 YEARS OF AGE AND EMPLOYED OR ACTIVELY SEEKING WORK AS A PERCENTAGE OF THE TOTAL NON-INSTITUTIONAL POPULATION 16 YEARS OF AGE AND OVER)



SOURCE OF HISTORICAL DATA: U.S. Bureau of Labor Statistics, Employment and Earnings, Vol. 23, No. 3 (September 1976), Table A-1, p. 19.

Table 23

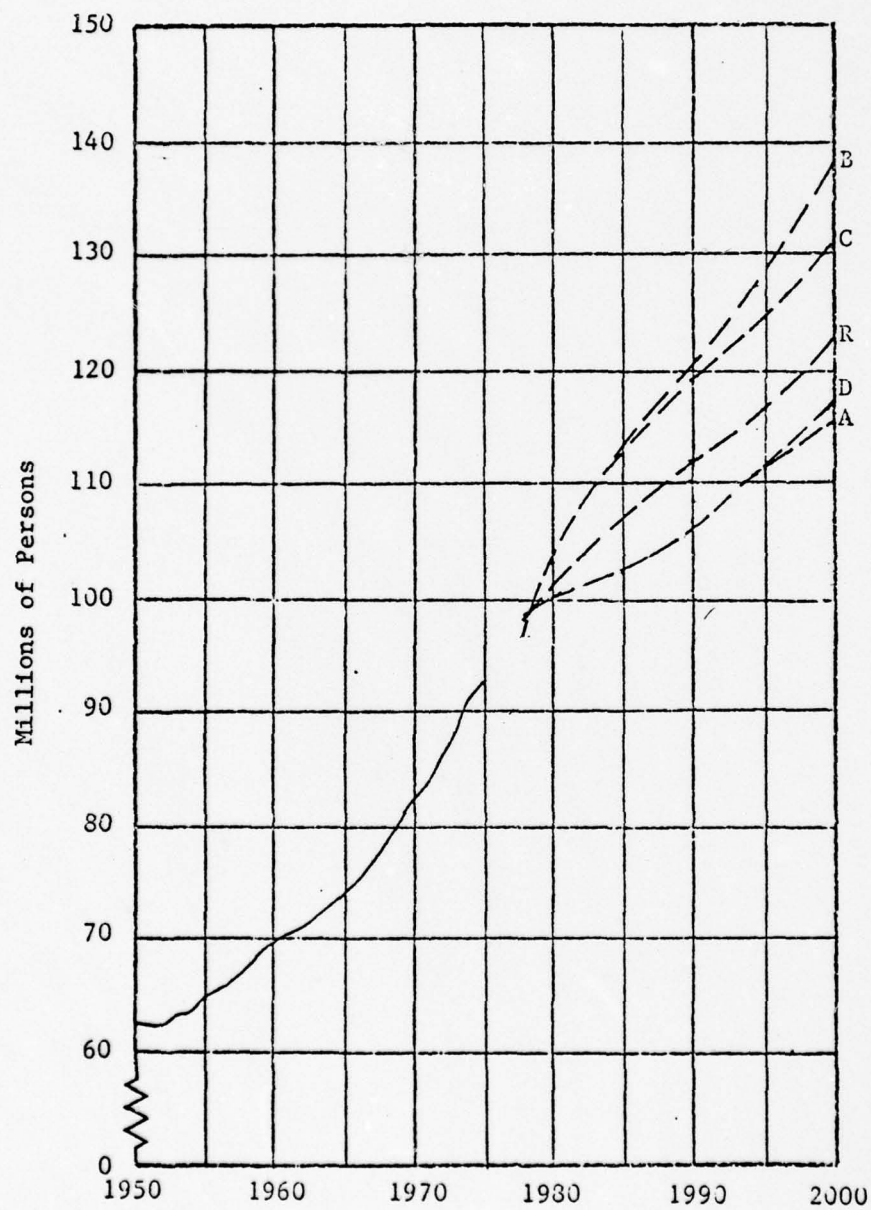
TOTAL LABOR FORCE PARTICIPATION RATE
(Percent)Historic Data

1950	59.90	1963	59.60
1951	60.40	1964	59.60
1952	60.40	1965	59.70
1953	60.20	1966	60.10
1954	60.00	1967	60.60
1955	60.40	1968	60.70
1956	61.00	1969	61.10
1957	60.60	1970	61.30
1958	60.40	1971	61.00
1959	60.20	1972	61.00
1960	60.20	1973	61.40
1961	60.20	1974	61.80
1962	59.70	1975	61.80

Projected Data

	S C E N A R I O				
	A	B	C	D	R
1976	61.30	61.30	61.30	61.30	61.30
1977	61.31	61.32	61.30	61.19	61.18
1978	61.12	61.48	61.39	60.90	60.93
1979	60.80	61.78	61.61	60.45	60.70
1980	60.23	62.12	61.84	59.76	60.38
1981	59.60	62.63	62.23	59.16	60.25
1982	59.14	63.20	62.73	58.73	60.31
1983	58.86	63.69	63.20	58.51	60.38
1984	58.83	64.14	63.67	58.50	60.53
1985	58.80	64.45	64.01	58.48	60.64
1986	58.78	64.65	64.26	58.46	60.71
1987	58.75	64.85	64.50	58.44	60.79
1988	58.73	65.05	64.75	58.42	60.86
1989	58.69	65.24	64.99	58.39	60.93
1990	58.67	65.45	65.23	58.37	61.00
1991	58.72	65.63	65.47	58.36	61.07
1992	58.82	65.79	65.65	58.34	61.13
1993	58.90	65.91	65.78	58.22	61.16
1994	58.99	66.04	65.92	58.07	61.19
1995	59.08	66.17	66.07	57.92	61.22
1996	59.16	66.30	66.22	57.77	61.23
1997	59.25	66.43	66.37	57.62	61.26
1998	59.34	66.57	66.53	57.48	61.28
1999	59.43	66.71	66.69	57.33	61.31
2000	59.51	66.83	66.84	57.17	61.32

FIGURE 24. CIVILIAN LABOR FORCE



SOURCE OF HISTORICAL DATA: U.S. Bureau of Labor Statistics, Employment and Earnings, Vol. 23, No. 3 (September 1976), Table A-1, p. 19.

Table 24

CIVILIAN LABOR FORCE
(Millions of Persons)

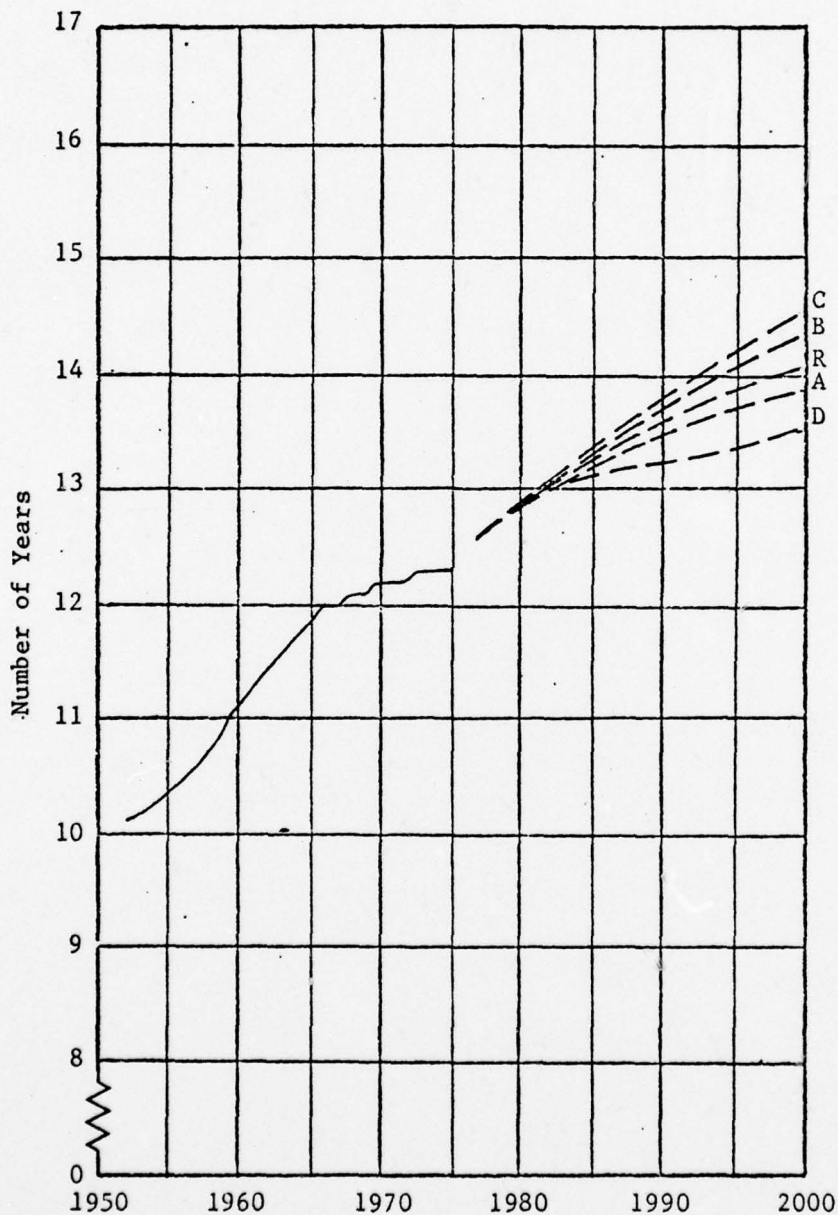
Historic Data

1950	62.2	1963	71.8
1951	62.0	1964	73.0
1952	62.1	1965	74.4
1953	63.0	1966	75.7
1954	63.6	1967	77.3
1955	65.0	1968	78.7
1956	66.5	1969	80.7
1957	66.9	1970	82.7
1958	67.6	1971	84.1
1959	68.3	1972	86.5
1960	69.6	1973	88.7
1961	70.4	1974	91.0
1962	70.6	1975	92.6

Projected Data

	S C E N A R I O				
	A	B	C	D	R
1976	96.9	96.9	96.9	96.9	96.9
1977	98.5	98.5	96.9	98.2	98.2
1978	99.6	100.2	97.0	99.3	99.3
1979	100.3	102.2	101.9	100.0	100.4
1980	100.9	104.1	103.7	100.2	101.2
1981	101.1	106.3	105.6	100.4	102.2
1982	101.4	108.4	107.6	100.8	103.5
1983	102.1	110.4	109.5	101.4	104.6
1984	102.8	112.2	111.4	102.3	105.9
1985	103.8	113.8	113.0	103.2	107.0
1986	104.8	115.2	114.5	104.2	108.2
1987	105.6	116.7	116.1	105.2	109.4
1988	106.5	118.0	117.5	106.0	110.4
1989	107.2	119.0	118.7	106.6	111.3
1990	107.8	120.3	119.9	107.2	112.1
1991	108.5	121.5	121.0	108.0	112.9
1992	109.2	122.8	121.9	108.9	113.8
1993	109.9	124.3	122.7	109.8	114.7
1994	110.7	125.9	123.6	110.7	115.6
1995	111.5	127.6	124.6	111.7	116.6
1996	112.4	129.4	125.7	112.8	117.7
1997	113.1	131.4	126.8	113.9	118.9
1998	114.0	133.4	127.9	115.2	120.1
1999	114.9	135.5	129.0	116.4	121.3
2000	115.9	137.6	130.1	117.7	122.5

FIGURE 25. MEDIAN NUMBER OF YEARS OF SCHOOL COMPLETED BY THE CIVILIAN NON-INSTITUTIONAL POPULATION, 25 YEARS OF AGE AND OVER



SOURCE OF HISTORICAL DATA: U.S. Bureau of the Census, "Educational Attainment in the United States (title varies)," Current Population Reports, Series P-20, Nos. 45 (October 1953), 77 (December 1957), 99 (February 1960), 121 (February 1963), 138 (May 1965), 169 (February 1968), 182 (April 1969), 194 (February 1970), 207 (November 1970), 229 (December 1971), 243 (November 1972), 274 (December 1974), and 295 (June 1976).

Table 25

MEDIAN NUMBER OF YEARS OF SCHOOL COMPLETED BY THE CIVILIAN
NON-INSTITUTIONAL POPULATION, 25 YEARS OF AGE AND OVER
(Number of Years)

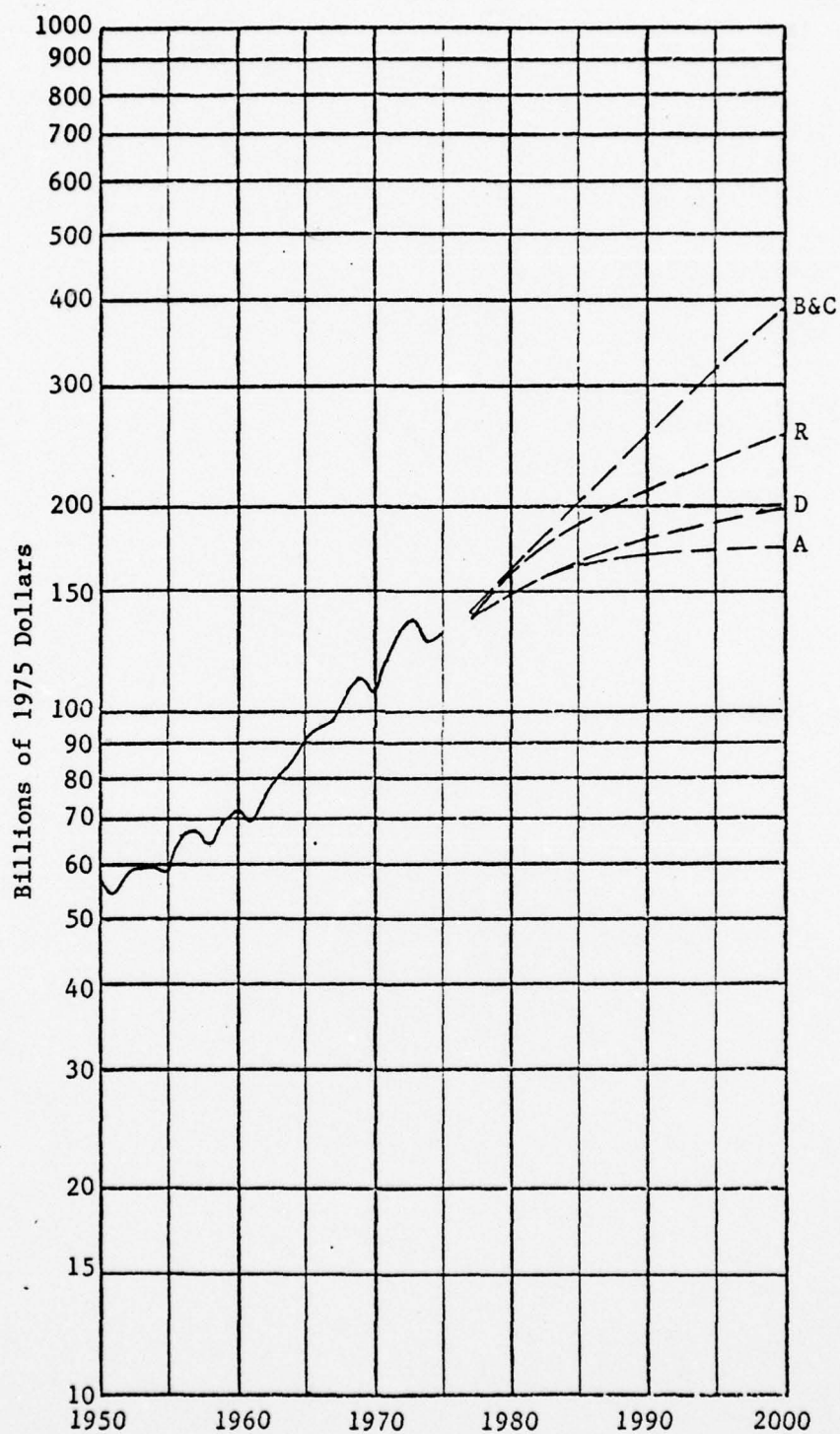
Historic Data

1950		1963	
1951		1964	11.70
1952	10.10	1965	11.80
1953		1966	12.00
1954		1967	12.00
1955		1968	12.10
1956		1969	12.10
1957	10.60	1970	12.20
1958		1971	12.20
1959	11.00	1972	12.20
1960		1973	12.30
1961		1974	12.30
1962	11.40	1975	12.30

Projected Data

	S C E N A R I O				
	A	B	C	D	R
1976	12.51	12.51	12.51	12.51	12.51
1977	12.59	12.59	12.59	12.59	12.59
1978	12.66	12.66	12.66	12.66	12.66
1979	12.74	12.74	12.74	12.74	12.74
1980	12.82	12.82	12.83	12.82	12.83
1981	12.89	12.90	12.91	12.89	12.91
1982	12.97	12.98	13.00	12.97	13.00
1983	13.06	13.08	13.10	13.05	13.10
1984	13.13	13.16	13.20	13.11	13.19
1985	13.21	13.25	13.31	13.17	13.28
1986	13.27	13.34	13.41	13.21	13.35
1987	13.32	13.41	13.50	13.24	13.41
1988	13.37	13.49	13.59	13.26	13.47
1989	13.42	13.57	13.69	13.28	13.52
1990	13.45	13.64	13.77	13.29	13.57
1991	13.48	13.71	13.85	13.28	13.61
1992	13.51	13.78	13.93	13.28	13.65
1993	13.55	13.85	14.01	13.28	13.69
1994	13.58	13.93	14.09	13.29	13.74
1995	13.61	14.00	14.17	13.31	13.79
1996	13.65	14.08	14.25	13.33	13.84
1997	13.69	14.15	14.31	13.35	13.88
1998	13.73	14.22	14.38	13.39	13.94
1999	13.78	14.29	14.45	13.43	14.00
2000	13.84	14.37	14.53	13.49	14.06

FIGURE 26. PERSONAL CONSUMPTION EXPENDITURES FOR TRANSPORTATION (GOODS AND SERVICES)



SOURCE OF HISTORICAL DATA: U.S. Bureau of Economic Analysis, National Income and Wealth Division, unpublished data, January 1, 1976.

Table 26

PERSONAL CONSUMPTION EXPENDITURES FOR TRANSPORTATION
(GOODS AND SERVICES)
(Billions of 1975 Dollars)

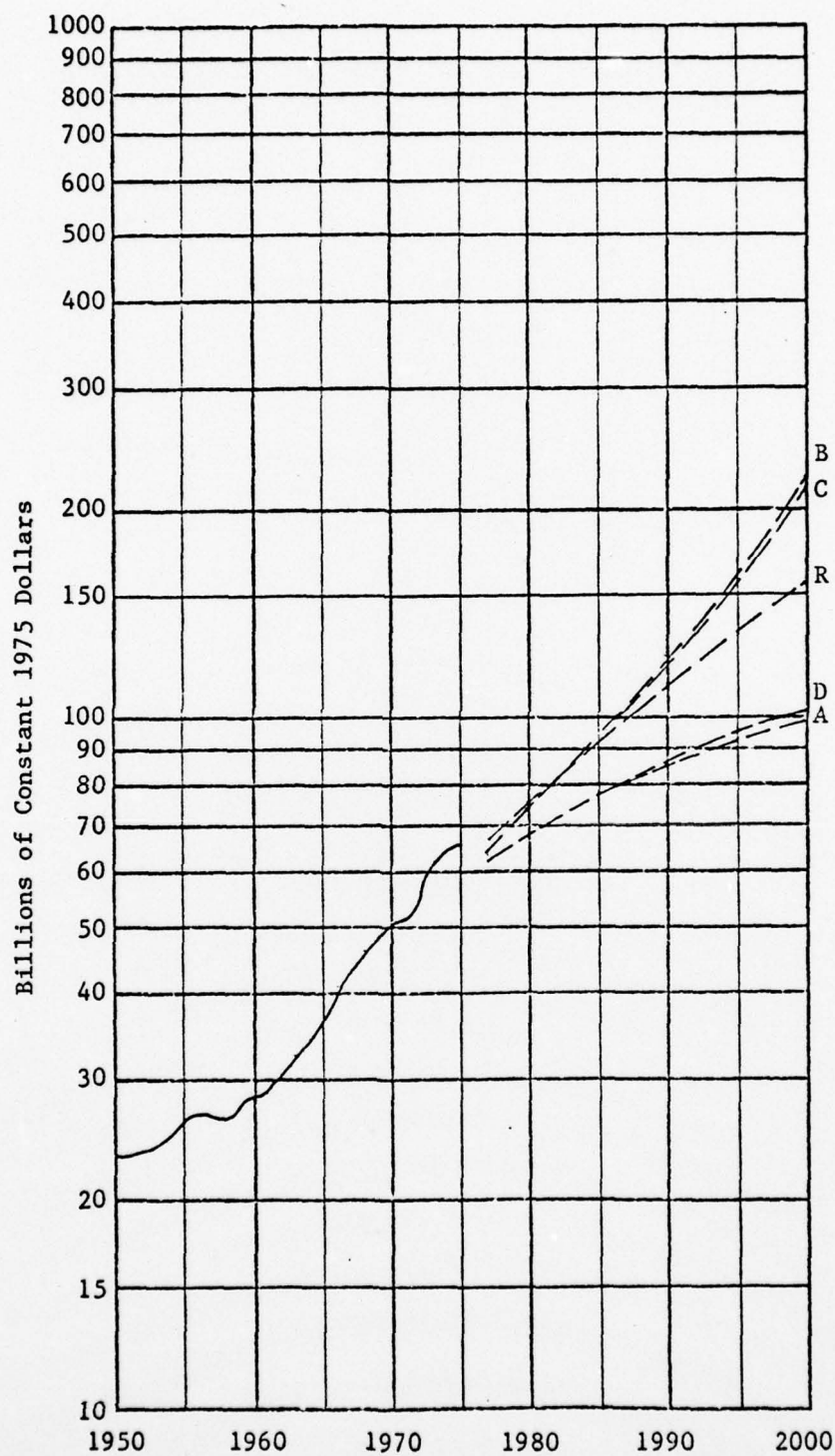
Historic Data

1950	57.40	1963	80.90
1951	54.90	1964	84.70
1952	59.20	1965	92.40
1953	59.20	1966	95.60
1954	59.20	1967	96.50
1955	68.60	1968	106.30
1956	65.80	1969	110.20
1957	67.20	1970	107.00
1958	63.40	1971	118.20
1959	69.90	1972	130.20
1960	72.50	1973	138.10
1961	69.60	1974	125.30
1962	75.80	1975	126.00

Projected Data

	S C E N A R I O				
	A	B	C	D	R
1976	129.97	129.97	129.97	129.97	129.98
1977	135.79	138.56	138.56	135.79	138.53
1978	140.40	145.67	145.62	140.40	145.00
1979	144.73	153.07	152.89	144.25	150.83
1980	148.60	160.82	160.43	148.25	157.50
1981	151.99	168.60	167.73	152.33	163.73
1982	155.33	176.71	175.48	156.39	169.75
1983	158.46	184.96	183.50	160.38	175.76
1984	161.28	193.22	191.93	164.12	181.78
1985	163.32	201.56	200.37	167.18	187.62
1986	164.99	210.66	209.71	169.77	192.84
1987	166.06	220.06	219.38	172.09	197.74
1988	166.79	229.77	229.25	174.41	202.66
1989	167.44	240.29	239.96	176.55	207.37
1990	167.85	251.05	250.99	178.68	211.22
1991	168.17	262.20	262.30	180.79	214.89
1992	168.49	274.39	274.54	182.86	218.61
1993	168.73	287.17	287.24	184.99	222.41
1994	169.12	300.78	300.48	186.99	226.52
1995	169.18	315.16	314.49	188.88	231.07
1996	169.46	330.37	329.21	190.84	236.15
1997	169.82	346.38	344.69	192.97	241.67
1998	170.36	363.69	361.11	194.97	247.59
1999	171.02	380.93	378.40	197.03	253.77
2000	171.79	399.56	396.64	199.15	260.31

FIGURE 27. PERSONAL CONSUMPTION EXPENDITURES FOR RECREATION (GOODS AND SERVICES)



SOURCE OF HISTORICAL DATA: U.S. Bureau of Economic Analysis, National Income and Wealth Division, unpublished data, July 1976.

Table 27

PERSONAL CONSUMPTION EXPENDITURES FOR RECREATION
(GOODS AND SERVICES)
(Billions of Constant 1975 Dollars)

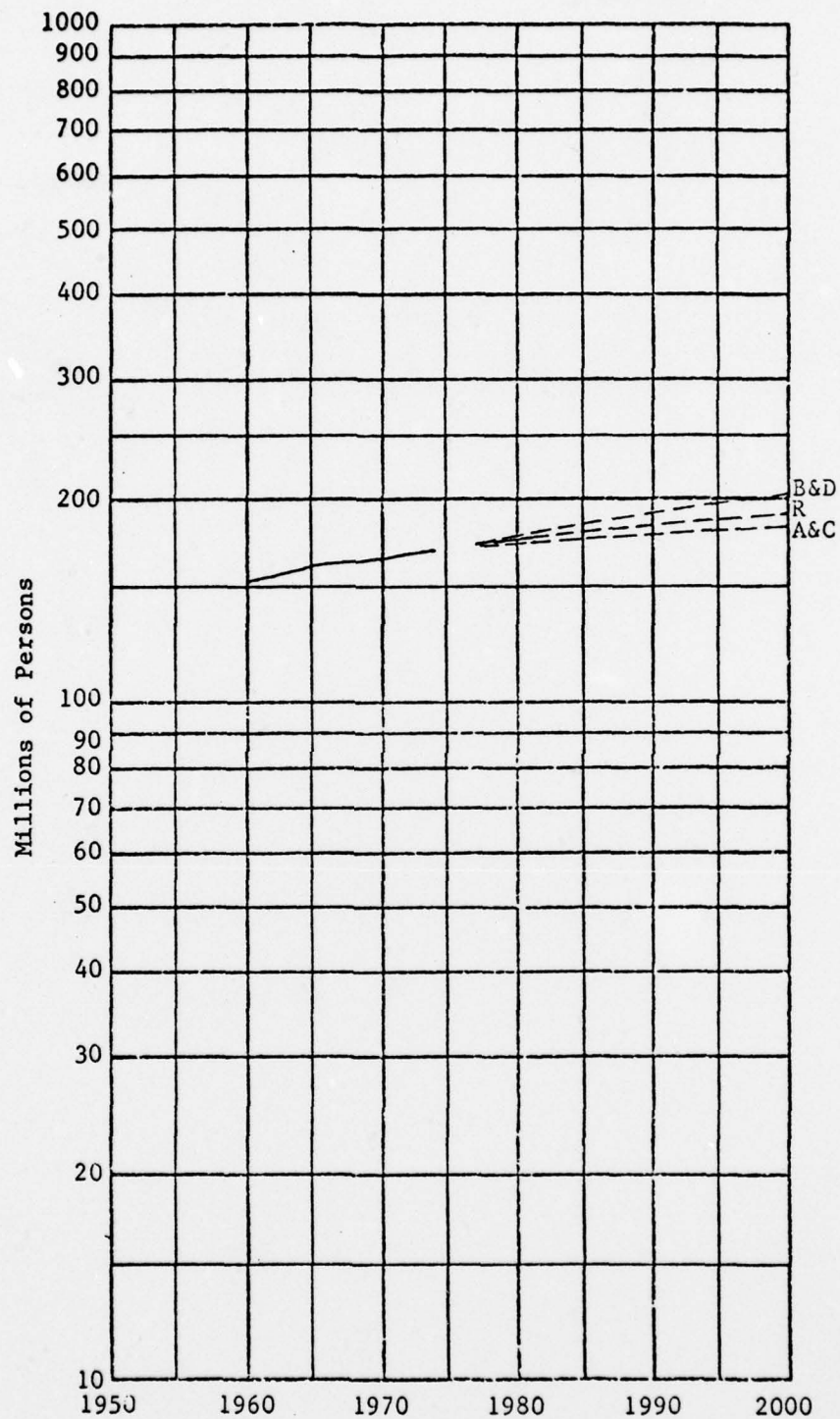
Historic Data

1950	23.30	1963	32.50
1951	23.60	1964	34.30
1952	23.80	1965	36.90
1953	24.10	1966	41.80
1954	24.50	1967	43.60
1955	26.00	1968	46.20
1956	27.10	1969	48.20
1957	26.40	1970	50.70
1958	26.20	1971	51.40
1959	27.80	1972	56.60
1960	28.50	1973	62.40
1961	28.90	1974	65.00
1962	30.60	1975	66.00

Projected Data

	S C E N A R I O				
	A	B	C	D	R
1976	59.42	59.42	59.42	59.42	64.95
1977	62.41	63.84	63.84	62.41	67.64
1978	64.77	67.38	67.39	64.76	70.39
1979	66.99	70.95	71.00	66.70	73.23
1980	69.01	74.54	74.69	68.73	76.21
1981	70.84	78.09	78.26	70.83	79.36
1982	72.72	81.82	82.05	72.94	82.70
1983	74.57	85.79	86.02	75.03	86.22
1984	76.46	90.02	90.38	77.09	89.85
1985	78.13	94.53	94.92	78.85	93.59
1986	79.74	99.66	100.12	80.48	97.41
1987	81.21	105.12	105.71	82.07	101.32
1988	82.62	110.90	111.62	190.91	105.21
1989	84.10	117.28	118.23	85.34	109.08
1990	85.59	124.02	125.29	87.03	112.90
1991	87.18	131.16	132.81	90.91	116.67
1992	88.83	139.00	141.09	90.50	120.46
1993	90.40	147.21	149.86	92.23	124.24
1994	91.99	155.88	158.99	93.83	129.00
1995	93.29	164.98	168.58	95.32	133.39
1996	94.59	174.55	178.60	96.79	137.92
1997	95.80	184.59	189.00	98.28	142.54
1998	97.05	195.41	199.90	99.67	147.37
1999	98.29	206.23	211.22	101.06	152.30
2000	99.51	217.85	223.00	102.46	157.40

FIGURE 28. POPULATION OF EUROPEAN COMMUNITY (FRANCE, UNITED KINGDOM, AND WEST GERMANY)



SOURCE OF HISTORICAL DATA: United Nations, Department of Economic and Social Affairs, Statistical Office, unpublished data.

Table 28

POPULATION OF EUROPEAN COMMUNITY
(FRANCE, UNITED KINGDOM, AND WEST GERMANY)
(Millions of Persons)

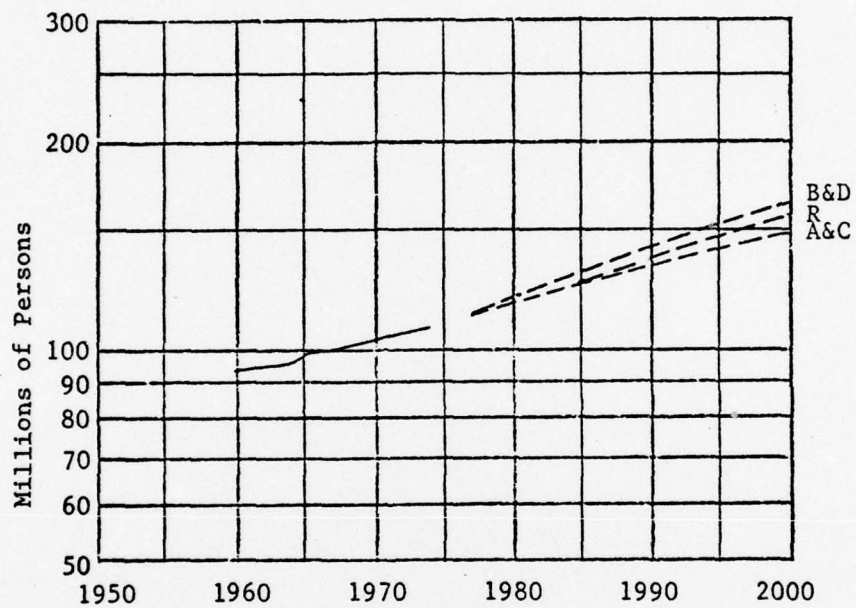
Historic Data

1950		1963	158.06
1951		1964	159.53
1952		1965	161.05
1953		1966	162.42
1954		1967	163.30
1955		1968	164.29
1956		1969	166.06
1957		1970	166.81
1958		1971	168.14
1959		1972	169.16
1960	152.65	1973	170.01
1961	154.23	1974	170.51
1962	156.26	1975	

Projected Data

	S C E N A R I O				
	A	B	C	D	R
1976	171.53	172.91	171.53	172.91	173.29
1977	172.05	174.12	172.05	174.12	174.27
1978	172.57	175.33	172.57	175.33	175.23
1979	173.08	176.56	173.08	176.56	176.16
1980	173.60	177.80	173.60	177.80	177.06
1981	174.12	179.04	174.12	179.04	177.94
1982	174.65	180.30	174.65	180.30	178.81
1983	175.17	181.56	175.17	181.56	179.65
1984	175.69	182.83	175.69	182.83	180.47
1985	176.22	184.11	176.22	184.11	181.27
1986	176.75	185.40	176.75	185.40	182.04
1987	177.28	186.70	177.28	186.70	182.81
1988	177.81	188.00	177.81	188.00	183.56
1989	178.35	189.32	178.35	189.32	184.29
1990	178.88	190.64	178.88	190.64	185.00
1991	179.42	191.98	179.42	191.98	185.71
1992	179.96	193.32	179.96	193.32	186.38
1993	180.50	194.67	180.50	194.67	187.06
1994	181.04	196.04	181.04	196.04	187.72
1995	181.58	197.41	181.58	197.41	188.34
1996	182.13	198.79	182.13	198.79	188.97
1997	182.67	200.18	182.67	200.18	189.59
1998	183.22	201.58	183.22	201.58	190.19
1999	183.77	202.00	183.77	202.00	190.79
2000	184.32	204.42	184.32	204.42	191.36

FIGURE 29. POPULATION OF JAPAN



SOURCE OF HISTORICAL DATA: United Nations, Department of Economic and Social Affairs, Statistical Office, unpublished data.

Table 29

POPULATION OF JAPAN
(Millions of Persons)

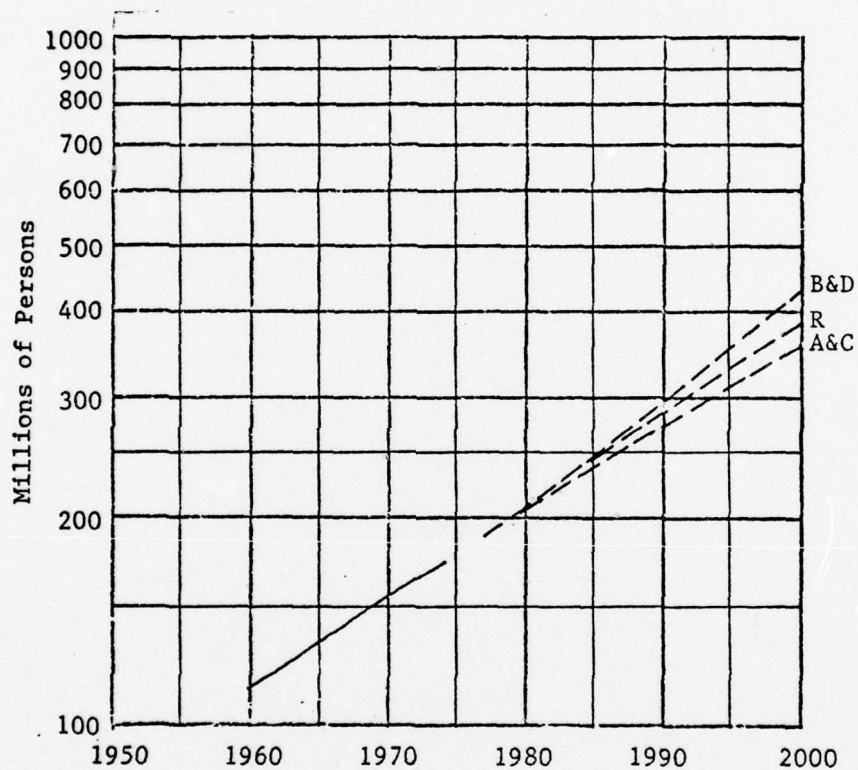
Historic Data

1950		1963	96.78
1951		1964	97.80
1952		1965	98.82
1953		1966	99.83
1954		1967	100.85
1955		1968	102.00
1956		1969	103.20
1957		1970	104.34
1958		1971	105.58
1959		1972	106.94
1960	94.11	1973	108.33
1961	94.98	1974	109.65
1962	95.91	1975	

Projected Data

	S C E N A R I O				
	A	B	C	D	R
1976	112.30	113.19	112.30	113.19	112.05
1977	113.64	115.00	113.64	115.00	113.43
1978	115.01	116.84	115.01	116.84	114.83
1979	116.39	118.71	116.39	118.71	116.27
1980	117.79	120.61	117.79	120.61	117.75
1981	119.20	122.54	119.20	122.54	119.27
1982	120.63	124.50	120.63	124.50	120.82
1983	122.08	126.49	122.08	126.49	122.42
1984	123.54	128.51	123.54	128.51	124.06
1985	125.02	130.57	125.02	130.57	125.74
1986	126.52	132.66	126.52	132.66	127.47
1987	128.04	134.78	128.04	134.78	129.25
1988	129.58	136.94	129.58	136.94	131.08
1989	131.13	139.13	131.13	139.13	132.96
1990	132.71	141.35	132.71	141.35	134.90
1991	134.30	143.62	134.30	143.62	136.89
1992	135.91	145.91	135.91	145.91	138.94
1993	137.54	148.25	137.54	148.25	141.06
1994	139.19	150.62	139.19	150.62	143.24
1995	140.86	153.03	140.86	153.03	145.49
1996	142.55	155.48	142.55	155.48	147.81
1997	144.26	157.97	144.26	157.97	150.21
1998	146.00	160.49	146.00	160.49	152.68
1999	147.75	163.06	147.75	163.06	155.24
2000	149.52	165.67	149.52	165.67	157.89

FIGURE 30. POPULATION OF LATIN AMERICA (BRAZIL, MEXICO, AND VENEZUELA)



SOURCE OF HISTORICAL DATA: United Nations, Department of Economic and Social Affairs, Statistical Office, unpublished data.

Table 30

POPULATION OF LATIN AMERICA
(BRAZIL, MEXICO, AND VENEZUELA)
(Millions of Persons)

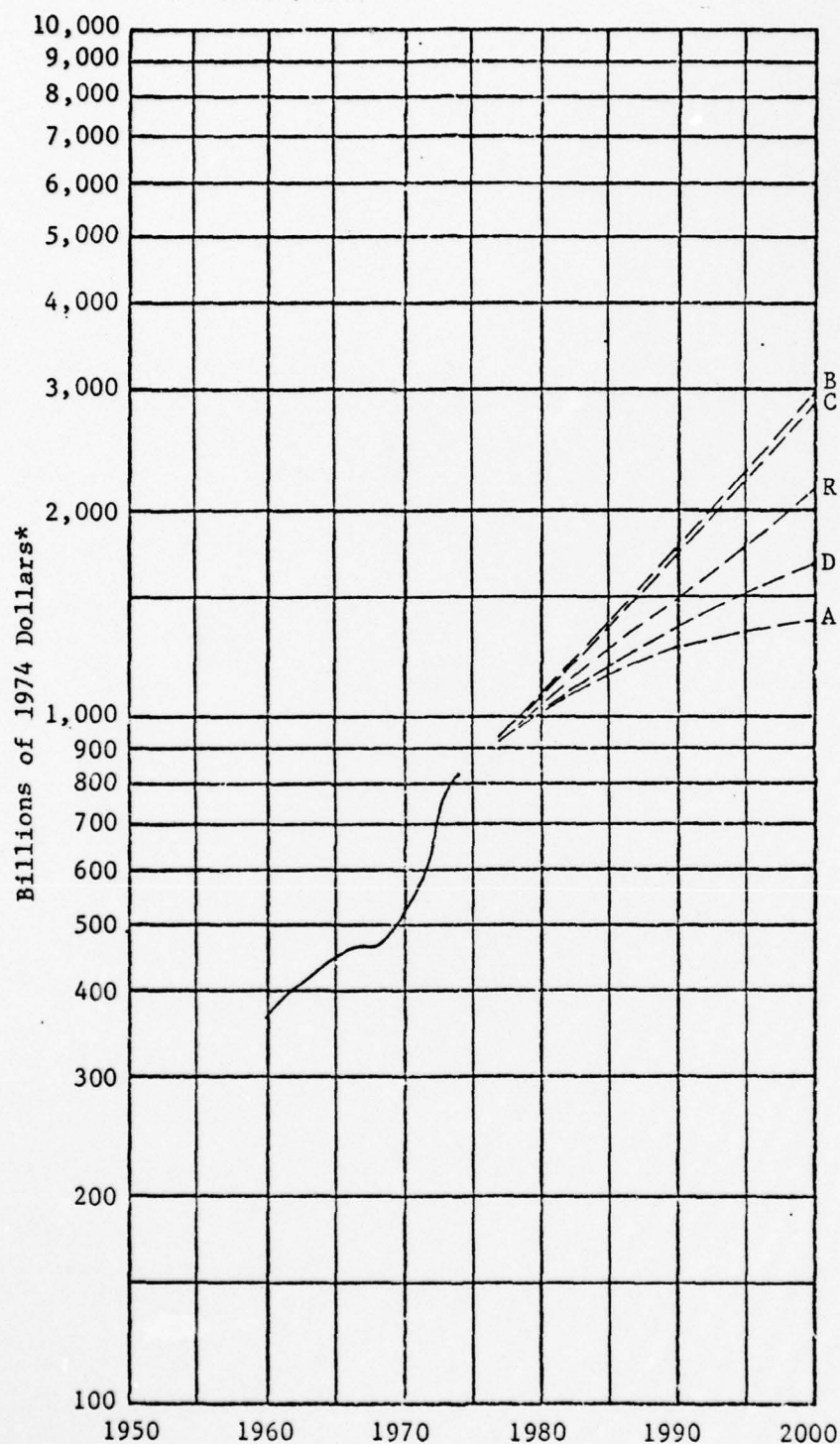
Historic Data

1950		1963	124.69
1951		1964	128.62
1952		1965	132.62
1953		1966	136.74
1954		1967	141.09
1955		1968	145.34
1956		1969	149.79
1957		1970	154.24
1958		1971	159.11
1959		1972	163.89
1960	113.98	1973	168.99
1961	117.26	1974	173.97
1962	120.85	1975	

Projected Data

	S C E N A R I O				
	A	B	C	D	R
1976	183.85	185.29	183.85	185.29	184.92
1977	188.00	191.10	188.00	191.10	190.66
1978	194.29	197.12	194.29	197.12	196.57
1979	199.73	203.37	199.73	203.37	202.66
1980	205.32	209.85	205.32	209.85	208.94
1981	211.07	216.58	211.07	216.58	215.42
1982	216.98	223.59	216.98	223.59	222.10
1983	223.06	230.88	223.06	230.88	228.98
1984	229.30	238.47	229.30	238.47	236.08
1985	235.72	246.40	235.72	246.40	243.40
1986	242.32	254.67	242.32	254.67	250.94
1987	249.11	263.31	249.11	263.31	258.72
1988	256.08	272.36	256.08	272.36	266.74
1989	263.25	281.85	263.25	281.85	275.01
1990	270.62	291.80	270.62	291.80	283.54
1991	278.20	302.27	278.20	302.27	292.33
1992	285.99	313.29	285.99	313.29	301.39
1993	294.00	324.90	294.00	324.90	310.73
1994	302.23	337.18	302.23	337.18	320.37
1995	310.69	350.19	310.69	350.19	330.30
1996	319.39	364.00	319.39	364.00	340.54
1997	328.33	378.68	328.33	378.68	351.09
1998	337.53	394.35	337.53	394.35	361.98
1999	346.98	411.12	346.98	411.12	373.20
2000	356.69	429.11	356.69	429.11	384.77

FIGURE 31. GROSS DOMESTIC PRODUCT OF THE EUROPEAN COMMUNITY
(FRANCE, UNITED KINGDOM, AND WEST GERMANY)



SOURCE OF HISTORICAL DATA: United Nations, Department of Economic and Social Affairs, Statistical Office, unpublished data.

*Adjusted by implicit price deflator for GDP for each country.

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ALTERNATIVE FUTURE SCENARIOS FOR THE NATIONAL AVIATION SYSTEM. --ETC(U)

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Table 31

GROSS DOMESTIC PRODUCT OF THE EUROPEAN COMMUNITY
(FRANCE, UNITED KINGDOM, AND WEST GERMANY)
(Billions of 1974 Dollars*)

Historic Data

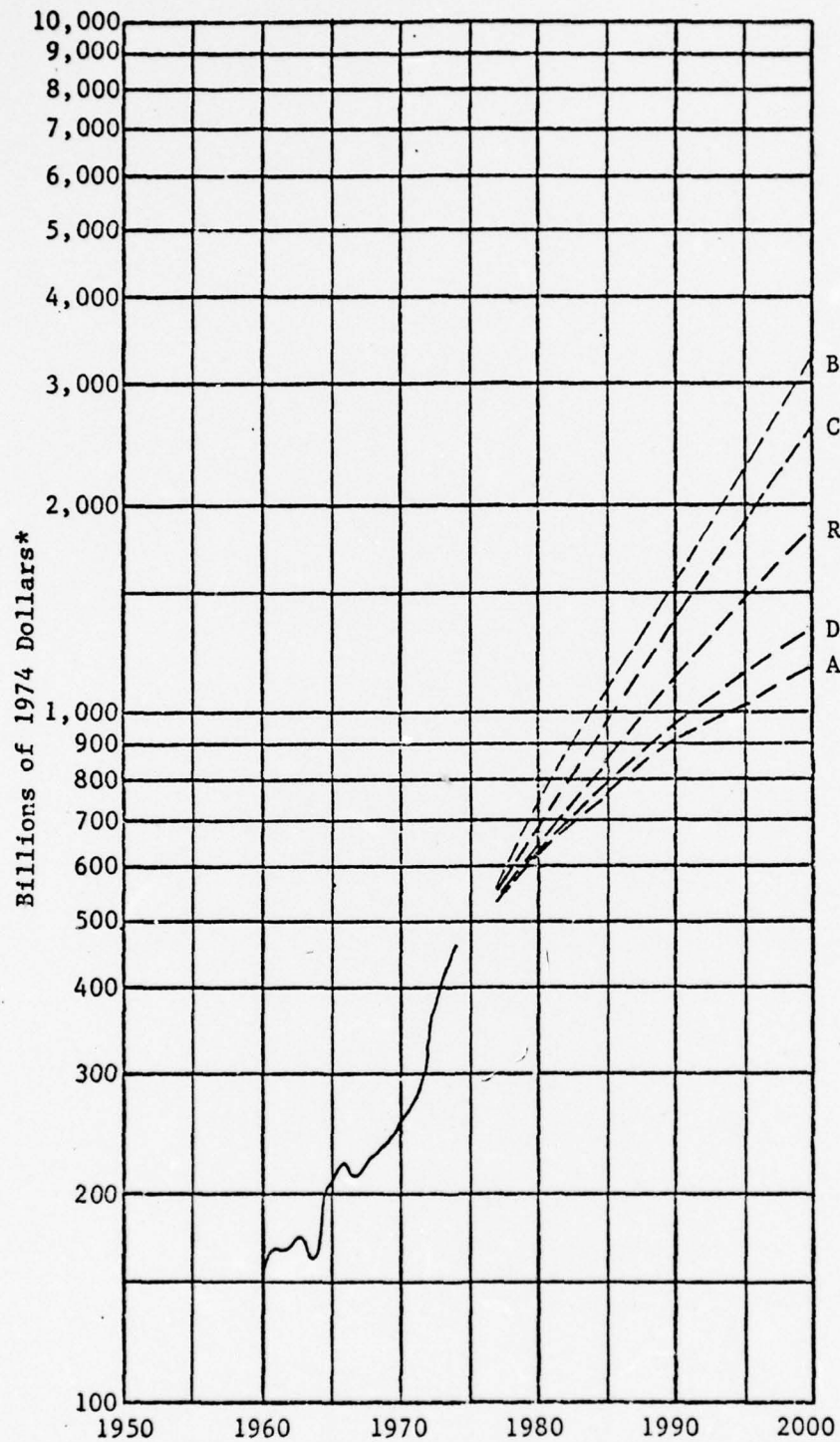
1950		1963	414.43
1951		1964	430.62
1952		1965	445.72
1953		1966	458.81
1954		1967	466.77
1955		1968	466.24
1956		1969	483.00
1957		1970	518.70
1958		1971	568.20
1959		1972	652.30
1960	362.85	1973	779.03
1961	385.50	1974	823.33
1962	400.26	1975	

Projected Data

	S C E N A R I O				
	A	B	C	D	R
1976	890.51	895.66	895.66	892.23	893.94
1977	926.13	934.17	934.17	928.81	931.49
1978	958.55	976.21	975.26	962.25	968.75
1979	992.10	1020.14	1018.19	996.89	1007.50
1980	1026.82	1066.05	1062.99	1032.77	1047.80
1981	1062.76	1114.02	1109.76	1069.96	1089.71
1982	1084.02	1170.83	1164.14	1098.84	1133.30
1983	1105.70	1230.54	1221.18	1128.51	1172.96
1984	1127.81	1293.30	1281.02	1158.98	1214.02
1985	1150.37	1359.26	1343.79	1190.27	1256.51
1986	1173.37	1428.58	1409.63	1222.41	1300.48
1987	1196.84	1501.44	1478.71	1255.42	1346.00
1988	1220.78	1578.01	1551.16	1289.31	1393.11
1989	1245.19	1658.49	1627.17	1324.12	1441.87
1990	1257.64	1749.71	1711.78	1359.87	1492.34
1991	1270.22	1845.94	1800.79	1396.59	1544.57
1992	1282.92	1947.47	1894.44	1425.92	1598.63
1993	1295.75	2054.58	1992.95	1455.86	1654.58
1994	1308.71	2167.58	2096.58	1486.44	1712.49
1995	1321.80	2286.80	2205.60	1517.65	1772.43
1996	1335.01	2412.57	2320.29	1549.52	1834.46
1997	1348.36	2545.27	2440.95	1582.06	1898.67
1998	1361.85	2685.26	2567.88	1615.29	1965.12
1999	1375.47	2832.94	2701.41	1649.21	2033.90
2000	1389.22	2988.76	2841.88	1683.84	2105.09

*Adjusted by implicit price deflator for GDP for each country.

FIGURE 32. GROSS DOMESTIC PRODUCT OF JAPAN



SOURCE OF HISTORICAL DATA: United Nations, Department of Economic and Social Affairs, Statistical Office, unpublished data.

*Adjusted by implicit price deflator for GDP for Japan.

Table 32

GROSS DOMESTIC PRODUCT OF JAPAN
(Billions of 1974 Dollars*)

Historic Data

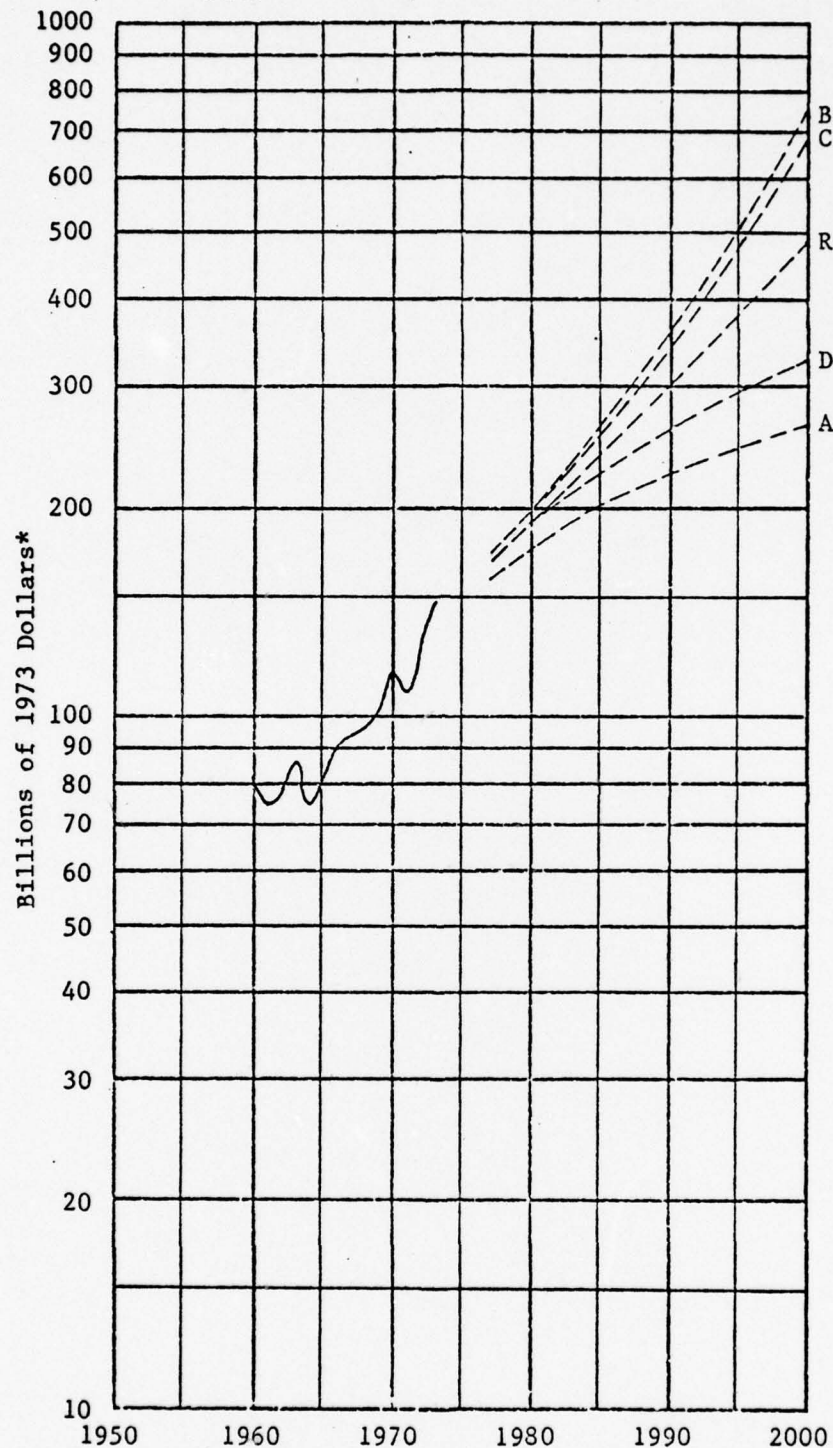
1950		1963	174.72
1951		1964	161.28
1952		1965	207.07
1953		1966	222.95
1954		1967	212.83
1955		1968	224.58
1956		1969	234.19
1957		1970	249.26
1958		1971	270.78
1959		1972	319.72
1960	153.92	1973	403.88
1961	166.35	1974	455.30
1962	168.64	1975	

Projected Data

	S C E N A R I O				
	A	B	C	D	R
1976	506.76	517.38	517.38	507.72	512.54
1977	534.63	551.53	551.53	536.15	543.81
1978	560.29	591.24	589.03	563.50	576.98
1979	587.19	692.93	629.09	592.24	609.87
1980	621.25	742.82	671.87	622.44	644.63
1981	651.07	796.31	717.55	654.18	681.37
1982	675.15	856.83	769.22	683.62	720.21
1983	700.14	921.95	824.60	714.39	759.10
1984	726.04	992.01	883.97	746.53	800.09
1985	752.90	1067.41	947.62	780.13	843.30
1986	780.76	1148.53	1015.85	815.23	888.84
1987	809.65	1235.82	1088.99	851.92	936.83
1988	839.61	1329.74	1167.39	890.25	987.42
1989	870.67	1430.80	1251.45	930.32	1040.74
1990	902.89	1539.54	1341.55	961.02	1096.94
1991	936.29	1656.55	1438.14	992.73	1156.18
1992	959.70	1782.44	1541.69	1025.49	1218.61
1993	983.69	1917.91	1652.69	1059.33	1284.42
1994	1008.29	2063.67	1771.68	1094.29	1353.77
1995	1033.49	2220.51	1899.24	1130.40	1426.88
1996	1059.33	2589.27	2035.99	1167.70	1503.93
1997	1085.81	2570.85	2182.58	1206.24	1585.14
1998	1112.96	2766.24	2339.73	1246.04	1670.74
1999	1140.78	2976.47	2508.19	1287.16	1760.96
2000	1169.30	3202.68	2688.78	1329.64	1856.05

*Adjusted by implicit price deflator for GDP for Japan.

FIGURE 33. GROSS DOMESTIC PRODUCT FOR LATIN AMERICA
(BRAZIL, MEXICO, AND VENEZUELA)



SOURCE OF HISTORICAL DATA: United Nations, Department of Economic and Social Affairs, Statistical Office, unpublished data.

*Adjusted by implicit price deflator for GDP for each country; expressed in 1973 dollars due to unavailability of 1974 deflator for Brazil.

Table 33

GROSS DOMESTIC PRODUCT FOR LATIN AMERICA
(BRAZIL, MEXICO, AND VENEZUELA)
(Billions of 1973 Dollars*)

Historic Data

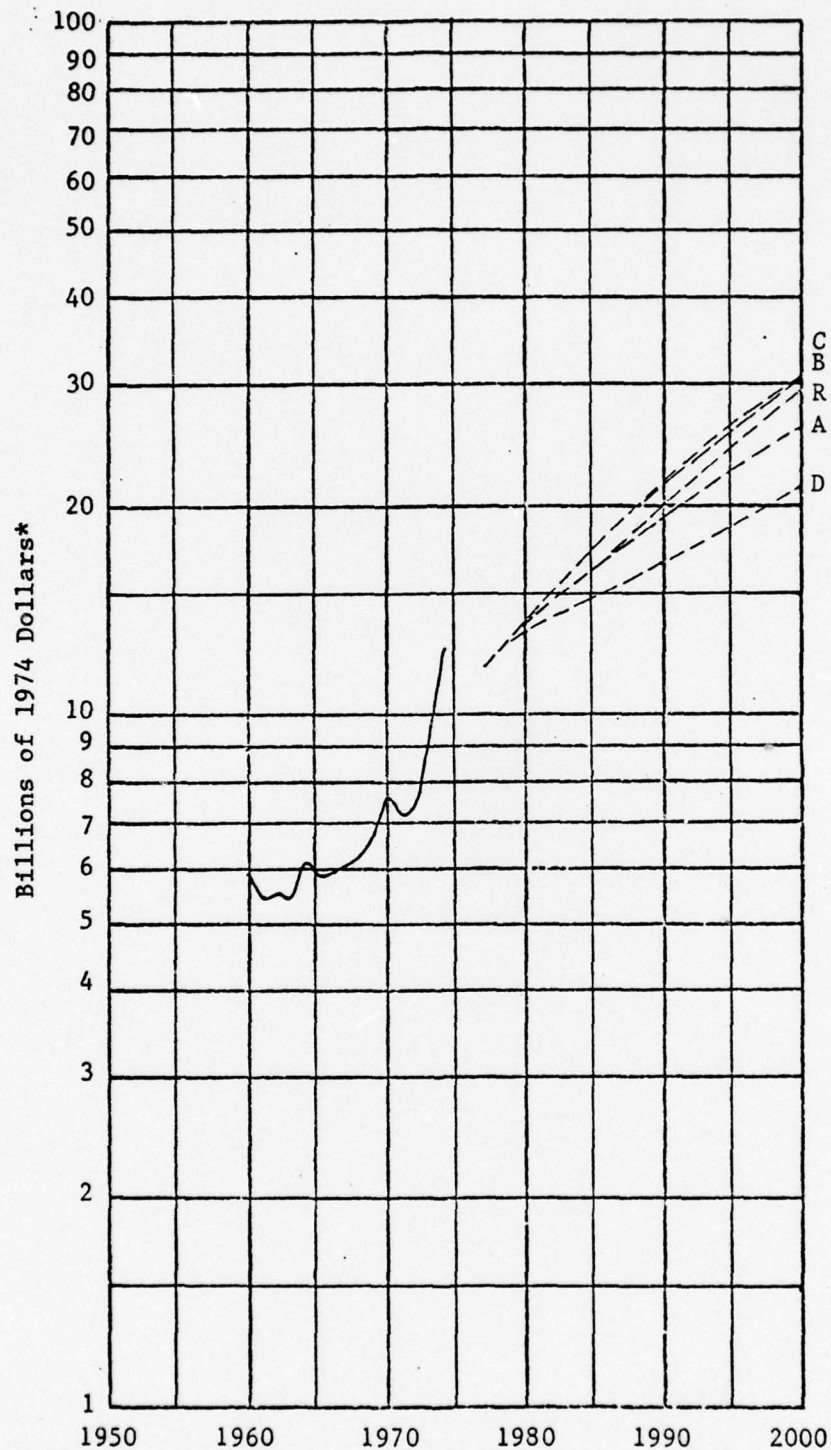
1950		1963	85.83
1951		1964	74.79
1952		1965	81.53
1953		1966	91.72
1954		1967	94.65
1955		1968	96.72
1956		1969	101.18
1957		1970	115.88
1958		1971	108.06
1959		1972	128.02
1960	80.19	1973	145.77
1961	74.53	1974	
1962	77.65	1975	

Projected Data

	S C E N A R I O				
	A	B	C	D	R
1976	150.06	166.35	165.87	163.97	164.44
1977	156.03	173.83	173.17	170.53	171.19
1978	161.97	181.66	180.79	177.35	178.21
1979	167.88	181.83	188.74	184.45	185.51
1980	173.73	198.37	197.05	190.72	193.12
1981	179.51	210.08	207.89	197.20	201.81
1982	185.20	222.47	219.32	203.91	210.89
1983	190.79	235.60	231.38	210.84	220.38
1984	196.25	249.50	244.11	218.01	230.30
1985	201.58	264.22	257.53	225.42	240.66
1986	206.77	279.81	271.70	233.08	251.49
1987	211.81	296.32	286.64	241.01	262.81
1988	216.68	316.46	305.85	247.52	275.42
1989	221.38	337.98	326.34	254.20	288.64
1990	225.91	360.97	348.20	261.06	302.50
1991	230.26	385.51	371.53	268.11	317.02
1992	234.43	411.73	396.42	275.35	332.23
1993	238.42	439.73	422.99	282.78	348.18
1994	242.22	469.63	451.33	290.42	364.90
1995	245.84	505.79	481.56	295.94	382.41
1996	249.28	544.73	513.83	301.56	400.76
1997	252.55	586.68	548.26	307.29	420.00
1998	255.64	638.31	584.99	313.13	440.16
1999	258.57	687.45	624.18	319.08	461.29
2000	261.33	740.39	666.00	325.14	483.43

*Adjusted by implicit price deflator for GDP for each country; expressed in 1973 dollars due to unavailability of 1974 deflator for Brazil.

FIGURE 34. U.S. EXPORTS TO THE EUROPEAN COMMUNITY
(FRANCE, UNITED KINGDOM, AND WEST GERMANY)



SOURCE OF HISTORICAL DATA: U.S. Department of Commerce, Bureau of Economic Analysis, Business Statistics 1973 (Washington, D.C.: U.S. Government Printing Office, September 1973), pp. 115-116; Survey of Current Business, Vol. 55, No. 2 (February 1975), p. S-22; Vol. 56, No. 2 (February 1976), p. S-22, and No. 8 (August 1976), p. S-22.

*Adjusted by implicit price deflators for GDP for each country.

Table 34

U.S. EXPORTS TO THE EUROPEAN COMMUNITY
(FRANCE, UNITED KINGDOM, AND WEST GERMANY)
(Billions of 1974 Dollars*)

Historic Data

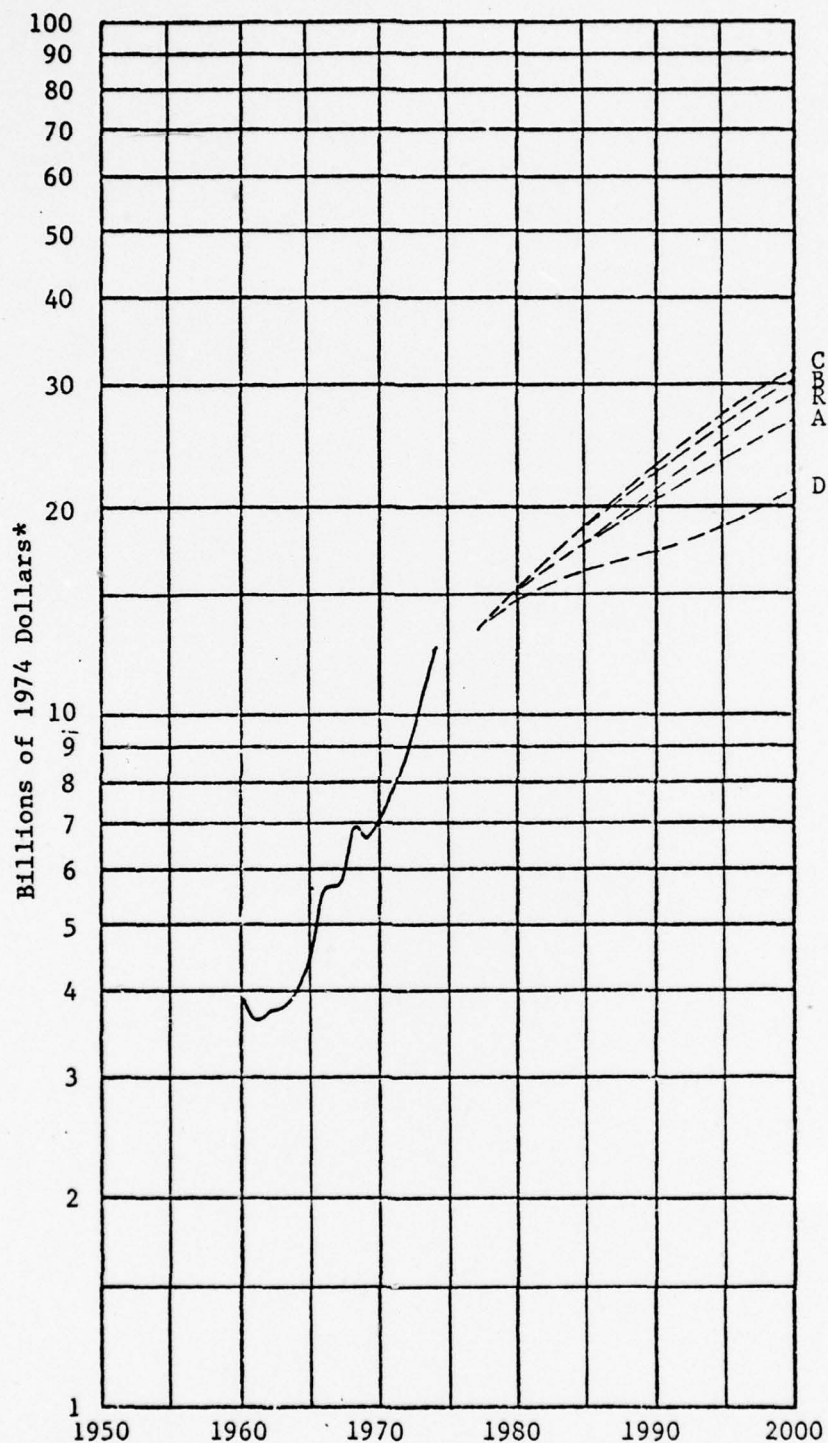
1950		1963	5.430
1951		1964	6.014
1952		1965	5.884
1953		1966	5.911
1954		1967	6.126
1955		1968	6.312
1956		1969	6.705
1957		1970	7.675
1958		1971	7.221
1959		1972	7.521
1960	5.928	1973	9.676
1961	5.451	1974	12.499
1962	5.551	1975	

Projected Data

	S C E N A R I O				
	A	B	C	D	R
1976	11.221	11.221	11.221	11.221	11.221
1977	11.820	11.820	11.820	11.820	11.820
1978	12.396	12.429	12.425	12.334	12.380
1979	12.960	13.075	13.063	12.773	12.907
1980	13.479	13.749	13.702	13.106	13.371
1981	14.017	14.497	14.402	13.469	13.851
1982	14.559	15.255	15.109	13.849	14.381
1983	15.101	15.998	15.826	14.219	14.975
1984	15.685	16.756	16.608	14.624	15.672
1985	16.271	17.492	17.392	14.975	16.378
1986	16.873	18.272	18.239	15.315	17.104
1987	17.493	19.098	19.122	15.666	17.854
1988	18.109	19.946	20.013	15.990	18.601
1989	18.720	20.792	20.899	16.292	19.352
1990	19.329	21.644	21.784	16.584	20.101
1991	19.929	22.503	22.670	16.853	20.853
1992	20.568	23.367	23.560	17.211	21.665
1993	21.244	24.228	24.439	17.668	22.532
1994	21.958	25.083	25.311	18.235	23.462
1995	22.692	25.943	26.187	18.798	24.433
1996	23.412	26.792	27.073	19.342	25.405
1997	24.095	27.621	27.952	19.856	26.346
1998	24.744	28.440	28.831	20.340	27.267
1999	25.355	29.244	29.702	20.808	28.156
2000	25.935	30.030	30.561	21.265	29.024

*Adjusted by implicit price deflators for GDP for each country.

FIGURE 35. U.S. IMPORTS FROM EUROPEAN COMMUNITY
(FRANCE, UNITED KINGDOM, AND WEST GERMANY)



SOURCE OF HISTORICAL DATA: U.S. Department of Commerce, Bureau of Economic Analysis, *Business Statistics 1973* (Washington, D.C.: U.S. Government Printing Office, September 1973), pp. 115-116; *Survey of Current Business*, Vol. 55, No. 2 (February 1975), p. S-23; Vol. 56, No. 2 (February 1976), p. S-23 and No. 8 (August 1976), p. S-23.

*Adjusted by implicit price deflator for GDP for each country.

Table 35

U.S. IMPORTS FROM EUROPEAN COMMUNITY
(FRANCE, UNITED KINGDOM, AND WEST GERMANY)
(Billions of 1974 Dollars*)

Historic Data

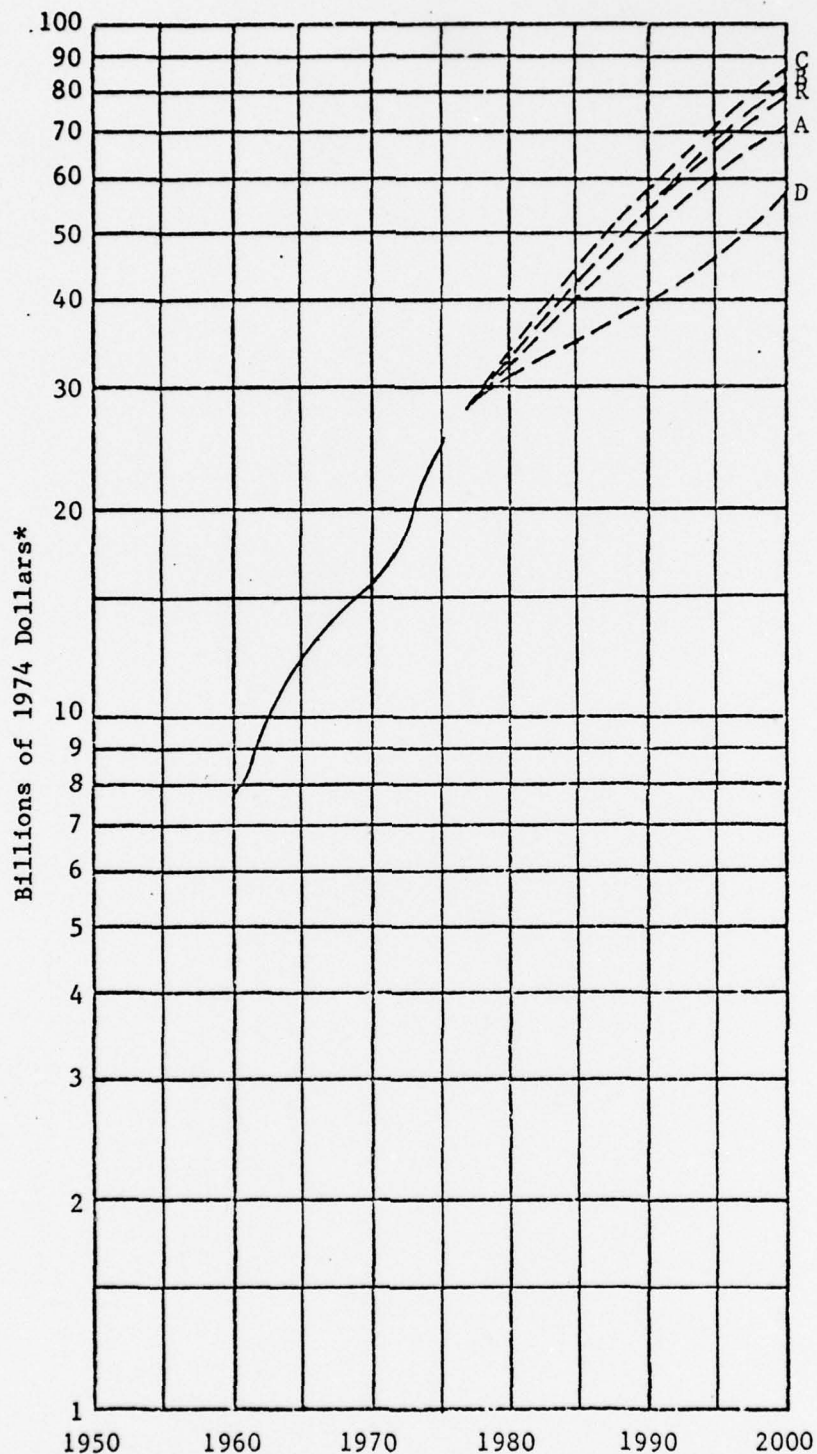
1950		1963	3.800
1951		1964	4.033
1952		1965	4.611
1953		1966	5.669
1954		1967	5.690
1955		1968	6.997
1956		1969	6.561
1957		1970	7.073
1958		1971	7.919
1959		1972	9.122
1960	3.892	1973	10.804
1961	3.627	1974	12.642
1962	3.776	1975	

Projected Data

	S C E N A R I O				
	A	B	C	D	R
	12.524	12.524	12.524	12.524	12.524
	13.203	13.203	13.203	13.203	13.203
	13.863	13.889	13.889	13.863	13.876
1979	14.480	14.589	14.581	14.424	14.498
1980	15.033	15.303	15.263	14.848	15.048
1981	15.551	16.018	15.918	15.142	15.525
1982	16.071	16.750	16.584	15.413	15.993
1983	16.613	17.475	17.279	15.683	16.526
1984	17.192	18.185	18.010	15.976	17.136
1985	17.787	18.909	18.817	16.259	17.838
1986	18.375	19.628	19.663	16.480	18.555
1987	18.959	20.353	20.516	16.678	19.279
1988	19.544	21.095	21.383	16.858	20.011
1989	20.157	21.862	22.275	17.068	20.768
1990	20.778	22.649	23.181	17.308	21.536
1991	21.389	23.437	24.080	17.545	22.290
1992	22.003	24.228	24.968	17.783	23.052
1993	22.601	24.999	25.823	18.076	23.805
1994	23.207	25.758	26.656	18.442	24.577
1995	23.793	26.501	27.456	18.890	25.339
1996	24.355	27.239	28.230	19.330	26.088
1997	24.913	27.977	29.013	19.764	26.827
1998	25.465	28.714	29.803	20.193	27.558
1999	26.020	29.452	30.594	20.615	28.298
2000	26.581	30.188	31.384	21.041	29.048

*Adjusted by implicit price deflator for GDP for each country.

FIGURE 36. U.S. DIRECT INVESTMENTS IN EUROPEAN COMMUNITY
(FRANCE, UNITED KINGDOM, AND WEST GERMANY)



SOURCE OF HISTORICAL DATA: "International Investment Position (Foreign Investments) of the United States (title varies)," Survey of Current Business, Vol. 44, No. 8 (August 1965), Table 2, p. 10; Vol. 45, No. 9 (September 1966), Table 2, p. 24; Vol. 46, No. 9 (September 1967), Table 5, p. 34; Vol. 47, No. 9 (September 1968), Table 3, p. 42; and Vol. 55, No. 8 (August 1976), Table 14, p. 49; also U.S. Department of Commerce, Bureau of Economic Analysis, Revised Data Series on U.S. Direct Investments Abroad (Washington, D.C., n.d.), Tables 1-9, pp. 1-9.

*Adjusted by implicit price deflator for GDP for each country.

Table 36

U.S. DIRECT INVESTMENTS IN EUROPEAN COMMUNITY
(FRANCE, UNITED KINGDOM, AND WEST GERMANY)
(Billions of 1974 Dollars*)

Historic Data

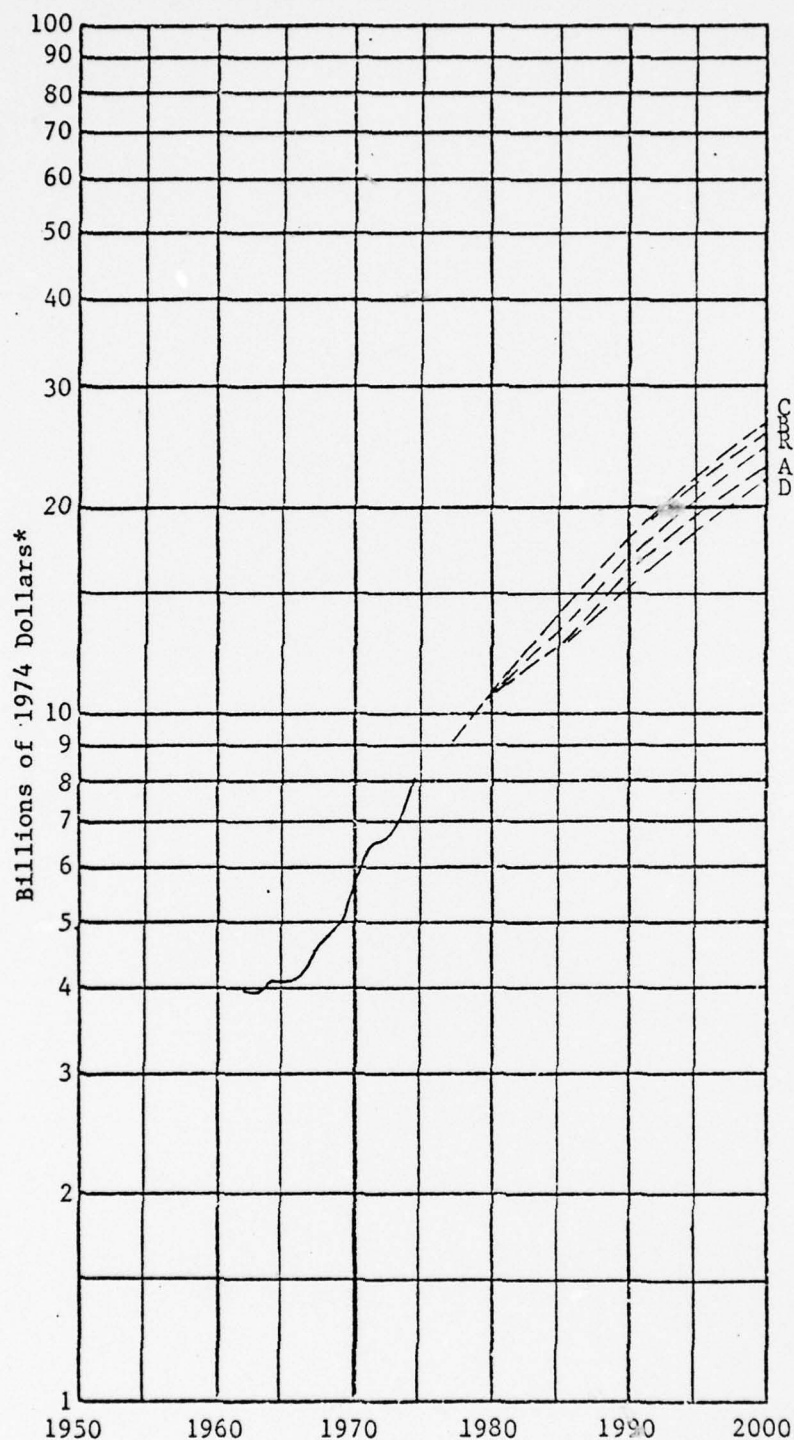
1950		1963	10.602
1951		1964	11.314
1952		1965	12.309
1953		1966	13.089
1954		1967	14.173
1955		1968	14.704
1956		1969	15.548
1957		1970	16.877
1958		1971	18.764
1959		1972	20.236
1960	7.969	1973	23.163
1961	8.243	1974	25.410
1962	9.638	1975	

Projected Data

	S C E N A R I O				
	A	B	C	D	R
1976	26.503	26.503	26.503	26.503	26.503
1977	28.138	28.138	28.138	28.138	28.138
1978	29.710	29.788	29.755	29.532	29.638
1979	31.182	31.440	31.382	30.586	30.978
1980	32.577	33.127	33.077	31.257	32.180
1981	33.984	34.915	34.957	31.788	33.422
1982	35.545	36.884	37.164	32.372	34.963
1983	37.276	38.988	39.621	33.065	36.826
1984	39.107	41.172	42.209	33.896	38.962
1985	40.998	43.367	44.794	34.787	41.152
1986	42.907	45.578	47.328	35.707	43.376
1987	44.811	47.828	49.834	36.648	45.591
1988	46.729	50.131	52.372	37.573	47.818
1989	48.622	52.478	54.941	38.434	50.059
1990	50.501	54.835	57.544	39.201	52.311
1991	52.393	57.243	60.237	39.895	54.610
1992	54.324	59.693	62.982	40.855	56.974
1993	56.327	62.177	65.779	42.119	59.445
1994	58.408	64.694	68.617	43.849	62.038
1995	60.557	67.273	71.497	45.766	64.746
1996	62.722	69.896	74.403	47.821	67.516
1997	64.901	72.577	77.374	50.018	70.354
1998	67.101	75.309	80.417	52.209	73.249
1999	69.319	78.092	83.530	54.417	76.202
2000	71.557	80.922	86.703	56.643	79.203

*Adjusted by implicit price deflator for GDP for each country.

FIGURE 37. INVESTMENTS IN UNITED STATES BY EUROPEAN COMMUNITY
(FRANCE, UNITED KINGDOM, AND WEST GERMANY)



SOURCE OF HISTORICAL DATA: "Foreign Direct Investments in the United States (title varies)," *Survey of Current Business*, Vol. 52, No. 2 (February 1973), Table 1, p. 30; Vol. 54, No. 10 (October 1975), Table 5, p. 40; and Vol. 55, No. 8 (August 1976), Table 7, p. 37.

*Adjusted by implicit price deflator for GDP for each country.

Table 37

INVESTMENTS IN UNITED STATES BY EUROPEAN COMMUNITY
(FRANCE, UNITED KINGDOM, AND WEST GERMANY)
(Billions of 1974 Dollars*)

Historic Data

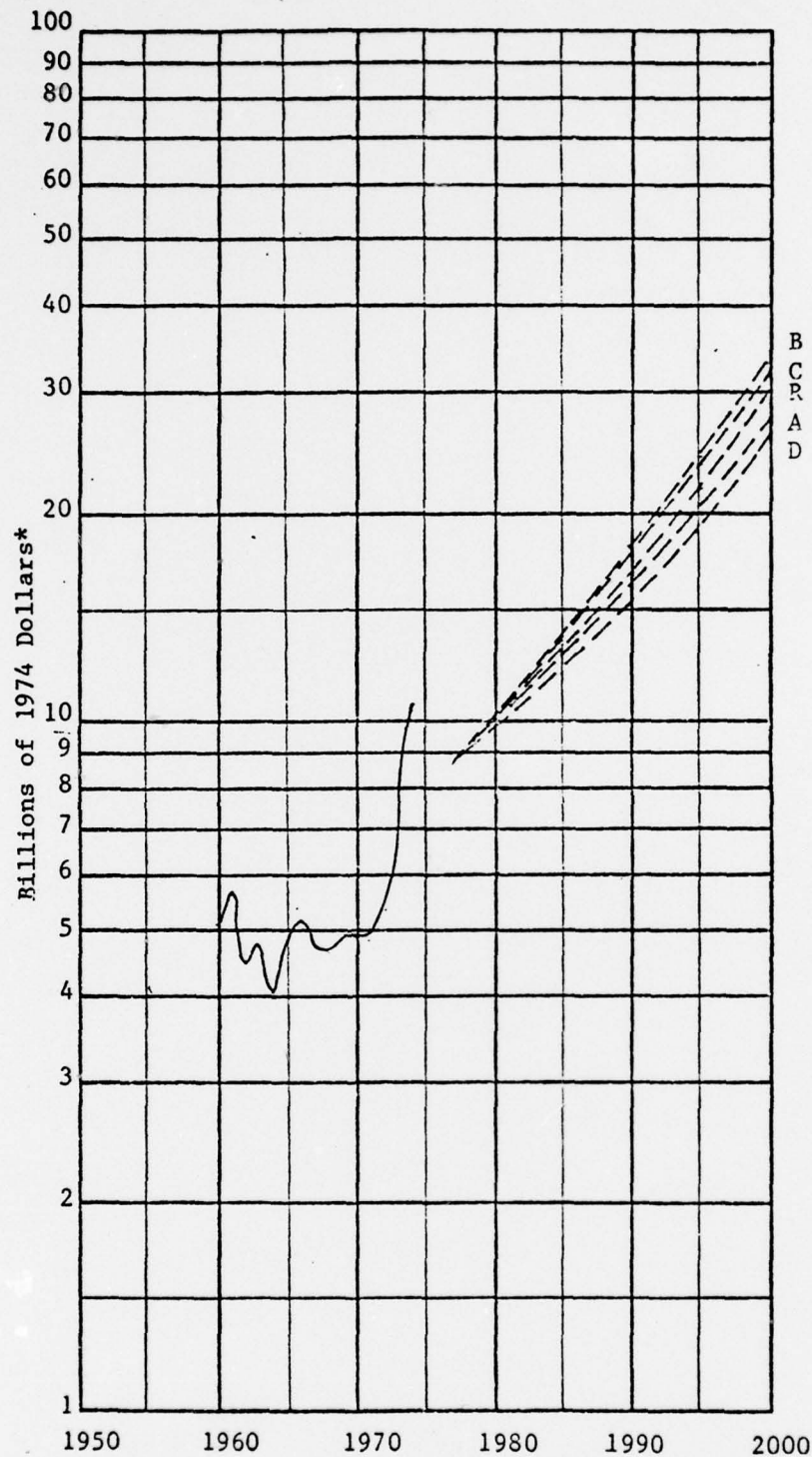
1950		1963	3.914
1951		1964	4.105
1952		1965	4.100
1953		1966	4.114
1954		1967	4.532
1955		1968	4.769
1956		1969	5.071
1957		1970	5.647
1958		1971	6.417
1959		1972	6.582
1960		1973	6.999
1961		1974	8.085
1962	3.990	1975	

Projected Data

	S C E N A R I O				
	A	B	C	D	R
1976	8.615	8.615	8.615	8.615	8.615
1977	9.154	9.154	9.154	9.154	9.154
1978	9.686	9.713	9.715	9.680	9.696
1979	10.194	10.289	10.290	10.169	10.227
1980	10.671	10.877	10.879	10.610	10.741
1981	11.102	11.475	11.474	10.990	11.224
1982	11.516	12.090	12.083	11.344	11.699
1983	11.945	12.727	12.718	11.706	12.190
1984	12.410	13.396	13.385	12.112	12.713
1985	12.932	14.096	14.007	12.565	13.285
1986	13.533	14.834	14.832	13.111	13.935
1987	14.186	15.603	15.614	13.717	14.641
1988	14.870	16.393	16.427	14.355	15.395
1989	15.569	17.202	17.264	15.015	16.181
1990	16.259	18.016	18.111	15.653	16.968
1991	16.939	18.834	18.965	16.282	17.756
1992	17.611	19.650	19.817	16.898	18.534
1993	18.281	20.461	20.664	17.520	19.308
1994	18.955	21.265	21.504	18.152	20.081
1995	19.634	22.059	22.336	18.795	20.854
1996	20.313	22.840	23.159	19.454	21.623
1997	20.979	23.610	23.971	20.123	22.386
1998	21.629	24.368	24.768	20.795	23.140
1999	22.263	25.114	25.551	21.470	23.882
2000	22.878	25.849	26.322	22.125	24.609

*Adjusted by implicit price deflator for GDP for each country.

FIGURE 38. U.S. EXPORTS TO JAPAN



SOURCE OF HISTORICAL DATA: U.S. Department of Commerce, Bureau of Economic Analysis, Business Statistics 1973 (Washington, D.C.: U.S. Government Printing Office, September 1973), pp. 115-116; Survey of Current Business, Vol. 55, No. 2 (February 1975), p. S-22; Vol. 56, No. 2 (February 1976), p. S-22 and No. 8 (August 1976), p. S-22.

*Adjusted by implicit price deflators for GDP for Japan.

Table 38

U.S. EXPORTS TO JAPAN
(Billions of 1974 Dollars*)

Historic Data

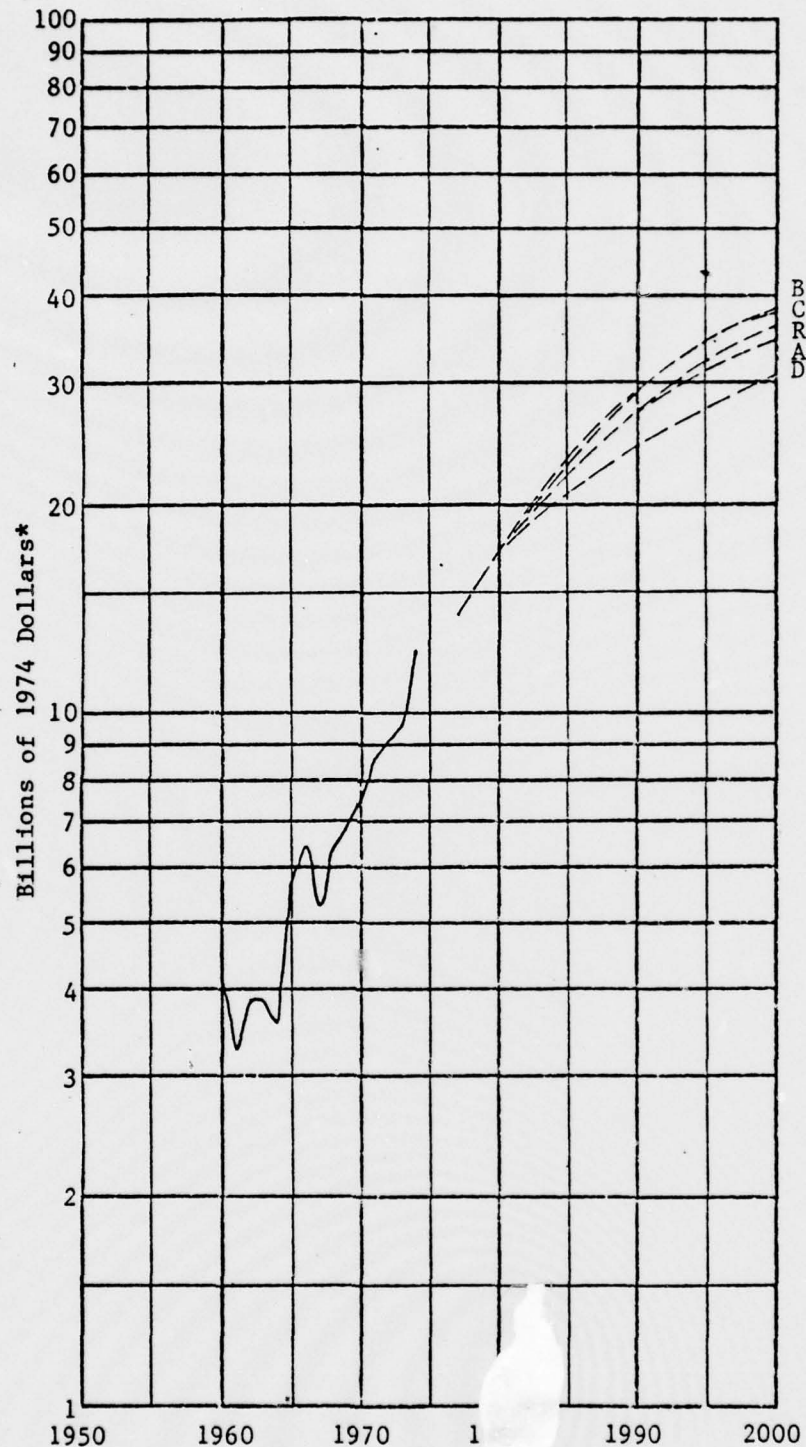
1960	5.108	1967	4.728
1961	5.741	1968	4.616
1962	4.496	1969	4.915
1963	9.727	1970	5.888
1964	4.018	1971	4.827
1965	4.837	1972	5.394
1966	5.138	1973	8.230
		1974	10.678

Projected Data

	S C E N A R I O				
	A	B	C	D	R
1976	8.321	8.321	8.321	8.321	8.321
1977	8.717	8.717	8.717	8.717	8.717
1978	9.113	9.142	9.134	9.085	9.109
1979	9.503	9.598	9.573	9.414	9.492
1980	9.877	10.083	10.012	9.695	9.850
1981	10.279	10.623	10.480	10.008	10.234
1982	10.719	11.209	10.979	10.377	10.674
1983	11.207	11.848	11.540	10.808	11.188
1984	11.755	12.551	12.198	11.306	11.786
1985	12.355	13.307	12.931	11.832	12.436
1986	12.997	14.127	13.746	12.381	13.126
1987	13.678	15.015	14.621	12.956	13.856
1988	14.405	15.960	15.549	13.558	14.636
1989	15.170	16.961	16.535	14.179	15.464
1990	15.981	18.030	17.586	14.833	16.343
1991	16.844	19.171	18.708	15.524	17.279
1992	17.775	20.375	19.883	16.310	18.296
1993	18.780	21.645	21.112	17.207	19.405
1994	19.864	22.986	22.401	18.227	20.619
1995	21.009	24.413	23.758	19.309	21.919
1996	22.225	25.931	25.207	20.458	23.309
1997	23.515	27.548	26.756	21.678	24.792
1998	24.882	29.291	28.422	22.976	26.378
1999	26.334	31.169	30.214	24.368	28.071
2000	27.890	33.195	32.145	25.862	29.891

*Adjusted by implicit price deflators for GDP for Japan.

FIGURE 39. U.S. IMPORTS FROM JAPAN



SOURCE OF HISTORICAL DATA: U.S. Department of Commerce, Bureau of Economic Analysis, Business Statistics 1973 (Washington, D.C.: U.S. Government Printing Office, September 1973), pp. 115-116; Survey of Current Business, Vol. 55, No. 2 (February 1976), p. 5-23, and No. 8 (August 1976), p. 5-23.

*Adjusted by implicit price deflator for GDP for Japan.

Table 39

U.S. IMPORTS FROM JAPAN
(Billions of 1974 Dollars*)

Historic Data

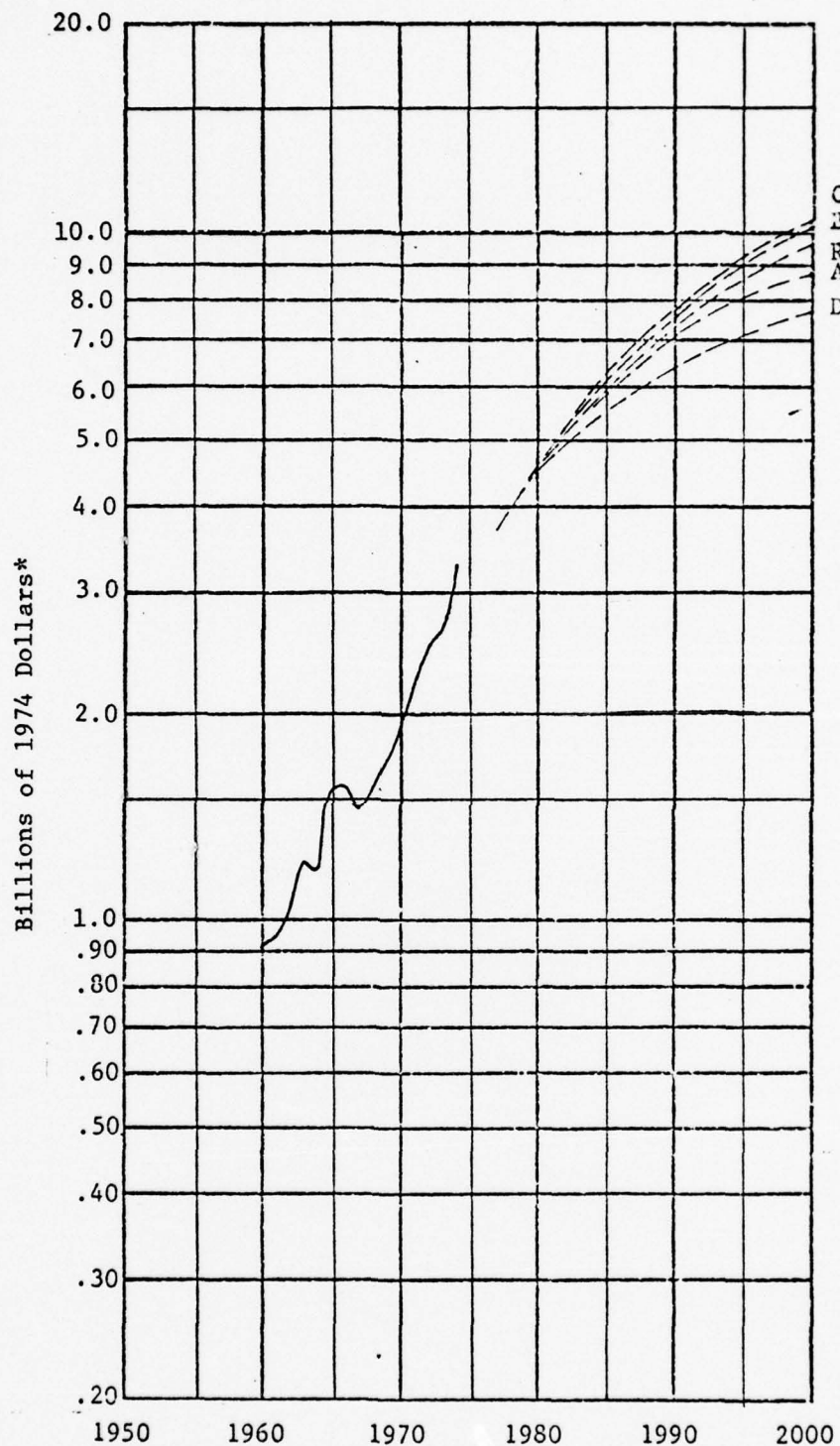
1950		1963	3.840
1951		1964	3.536
1952		1965	5.613
1953		1966	6.440
1954		1967	5.260
1955		1968	6.335
1956		1969	6.884
1957		1970	7.437
1958		1971	8.641
1959		1972	9.063
1960	4.102	1973	9.580
1961	3.296	1974	12.337
1962	3.880	1975	

Projected Data

	S C E N A R I O				
	A	B	C	D	R
1976	12.967	12.967	12.967	12.967	12.967
1977	13.953	13.953	13.953	13.953	13.953
1978	14.967	14.986	14.986	14.969	14.975
1979	15.971	16.048	16.032	15.910	15.963
1980	16.949	17.136	17.068	16.752	16.897
1981	17.924	18.257	18.099	17.505	17.770
1982	18.941	19.428	19.170	18.310	18.671
1983	19.990	20.624	20.298	19.170	19.667
1984	21.071	21.847	21.509	20.088	20.772
1985	22.159	23.086	22.787	20.991	21.975
1986	23.224	24.311	24.074	21.824	23.169
1987	24.264	25.530	25.350	22.611	24.327
1988	25.270	26.736	26.596	23.342	25.433
1989	26.245	27.928	27.821	24.028	26.516
1990	27.175	29.095	29.019	24.655	27.560
1991	28.058	30.225	30.177	25.225	28.565
1992	28.907	31.318	31.289	25.740	29.546
1993	29.722	32.356	32.339	26.312	30.501
1994	30.504	33.331	33.315	26.953	31.434
1995	31.226	34.241	34.208	27.673	32.312
1996	31.884	35.100	35.032	28.320	33.130
1997	32.496	35.909	35.812	28.893	33.902
1998	33.066	36.670	36.550	29.394	34.631
1999	33.593	37.379	37.237	29.858	35.321
2000	34.077	38.039	27.873	30.284	35.972

*Adjusted by implicit price deflator for GDP for Japan.

FIGURE 40. U.S. DIRECT INVESTMENTS IN JAPAN



SOURCE OF HISTORICAL DATA: "International Investment Position (Foreign Investments) of the United States (title varies)," Survey of Current Business, Vol. 44, No. 8 (August 1965), Table 2, p. 10; Vol. 45, No. 9 (September 1966), Table 2, p. 24; Vol. 46, No. 9 (September 1967), Table 5, p. 34; Vol. 47, No. 9 (September 1968), Table 3, p. 42; and Vol. 55, No. 8 (August 1976), Table 14, p. 49; also U.S. Department of Commerce Bureau of Economic Analysis, Revised Data Series on U.S. Direct Investments Abroad (Washington, D.C., n.d.), Tables 1-9, pp. 1-9.

*Adjusted by implicit price deflator for GDP for Japan.

Table 40

U.S. DIRECT INVESTMENTS IN JAPAN
(Millions of 1974 Dollars*)

Historic Data

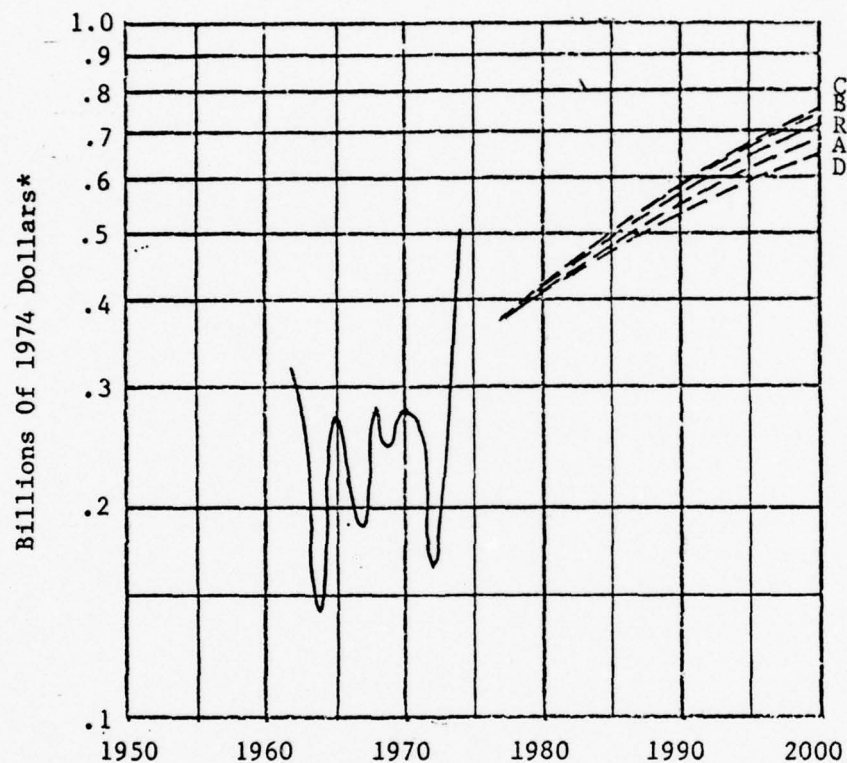
1950		1963	1210.2
1951		1964	1196.0
1952		1965	1569.7
1953		1966	1589.1
1954		1967	1463.1
1955		1968	1570.3
1956		1969	1726.7
1957		1970	1875.9
1958		1971	2277.3
1959		1972	2525.0
1960	907.1	1973	2644.5
1961	943.7	1974	3319.0
1962	1065.7	1975	

Projected Data

	S C E N A R I O				
	A	B	C	D	R
1976	3461.2	3461.2	3461.2	3461.2	3461.2
1977	3716.5	3716.5	3716.5	3716.5	3716.5
1978	3978.0	3981.8	3985.3	3964.2	3974.1
1979	4242.3	4255.7	4266.9	4198.0	4231.0
1980	4506.8	4536.6	4560.9	4412.6	4484.0
1981	4776.5	4826.8	4874.1	4625.6	4745.3
1982	5054.4	5128.5	5207.4	4844.9	5026.3
1983	5332.0	5438.6	5549.4	5068.9	5319.4
1984	5610.3	5757.2	5898.0	5296.8	5625.3
1985	5881.4	6079.2	6241.6	5518.0	5925.9
1986	6142.1	6403.2	6576.2	5728.0	6218.4
1987	6397.4	6727.6	6908.1	5926.6	6505.0
1988	6644.2	7051.2	7237.4	6111.7	6785.0
1989	6881.9	7373.5	7566.6	6282.9	7057.0
1990	7109.3	7693.0	7894.0	6439.6	7319.1
1991	7327.4	8004.7	8215.4	6584.0	7572.9
1992	7533.7	8301.5	8523.1	6731.7	7818.8
1993	7728.4	8581.7	8813.3	6884.5	8057.5
1994	7911.5	8844.0	9085.0	7043.4	8288.7
1995	8085.7	9092.5	9341.8	7191.1	8515.8
1996	8249.4	9327.3	9584.6	7328.1	8736.1
1997	8403.1	9547.7	9812.1	7455.5	8948.9
1998	8547.9	9753.1	10023.6	7578.8	9153.7
1999	8680.3	9942.5	10218.1	7689.5	9345.8
2000	8800.5	10116.1	10396.0	7788.0	9525.4

*Adjusted by implicit price deflator for GDP for Japan

FIGURE 41. INVESTMENT IN UNITED STATES BY JAPAN



SOURCE OF HISTORICAL DATA: "Foreign Direct Investments in the United States (title varies)," *Survey of Current Business*, Vol. 52, No. 2 (February 1973), Table 1, p. 30; Vol. 54, No. 10 (October 1975), Table 5, p. 40; and Vol. 55, No. 8 (August 1976), Table 7, p. 37.

*Adjusted by implicit price deflator for GDP for Japan.

Table 41

INVESTMENT IN UNITED STATES BY JAPAN
(Millions of 1974 Dollars*)

Historic Data

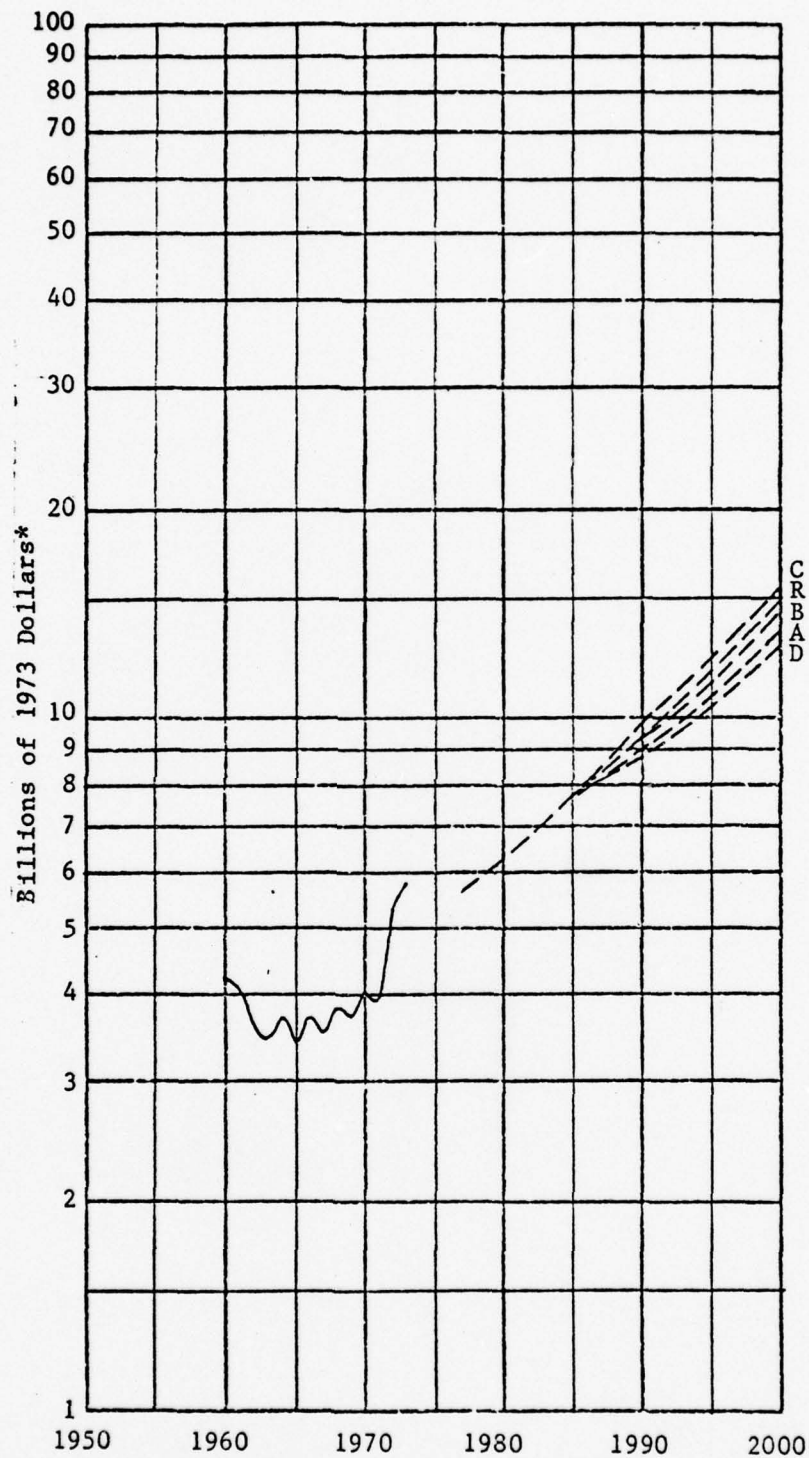
1950		1963	266.60
1951		1964	144.00
1952		1965	274.40
1953		1966	223.90
1954		1967	189.40
1955		1968	282.80
1956		1969	247.80
1957		1970	289.80
1958		1971	270.20
1959		1972	167.30
1960		1973	256.40
1961		1974	504.00
1962	320.00	1975	

Projected Data

	S C E N A R I O				
	A	B	C	D	R
1976	365.03	365.03	365.03	365.03	365.03
1977	379.87	379.87	379.87	379.87	379.87
1978	394.44	395.04	395.07	394.26	394.43
1979	408.28	410.34	410.34	407.48	408.19
1980	421.02	425.59	425.41	419.14	420.84
1981	433.01	440.90	440.38	429.71	432.74
1982	444.52	456.19	455.29	439.47	444.33
1983	456.46	471.88	470.55	449.57	456.57
1984	469.06	487.75	486.20	460.64	470.07
1985	482.66	504.08	502.71	472.86	484.97
1986	497.22	520.80	520.02	486.21	501.24
1987	512.16	537.54	537.99	499.92	518.32
1988	527.17	554.28	556.33	513.69	535.42
1989	541.86	570.75	574.34	526.99	551.94
1990	556.12	586.89	591.97	539.69	567.88
1991	570.16	602.78	609.17	552.01	583.44
1992	583.84	618.53	625.91	563.88	598.93
1993	597.19	634.11	642.28	575.63	614.67
1994	610.48	649.67	658.50	587.57	630.79
1995	623.74	665.16	674.44	599.75	647.05
1996	636.95	680.52	690.07	612.15	663.47
1997	649.96	695.74	705.32	624.77	679.71
1998	662.82	710.82	720.57	637.05	695.71
1999	674.97	725.42	735.35	648.57	711.10
2000	686.34	739.52	749.56	659.25	725.84

*Adjusted by implicit price deflator for GDP for Japan.

FIGURE 42. U.S. EXPORTS TO LATIN AMERICA (BRAZIL, MEXICO, AND VENEZUELA)



SOURCE OF HISTORICAL DATA: U.S. Department of Commerce, Bureau of Economic Analysis, Business Statistics 1973 (Washington, D.C.: U.S. Government Printing Office, September 1973), pp. 115-116; Survey of Current Business, Vol. 55, No. 2 (February 1975), p. S-22; Vol. 56, No. 2 (February 1976), p. S-22, and No. 8 (August 1976), p. S-22.

*Adjusted by implicit price deflator for GDP for each country.

Table 42

U.S. EXPORTS TO LATIN AMERICA
(BRAZIL, MEXICO, AND VENEZUELA)
(Billions of 1973 Dollars*)

Historic Data

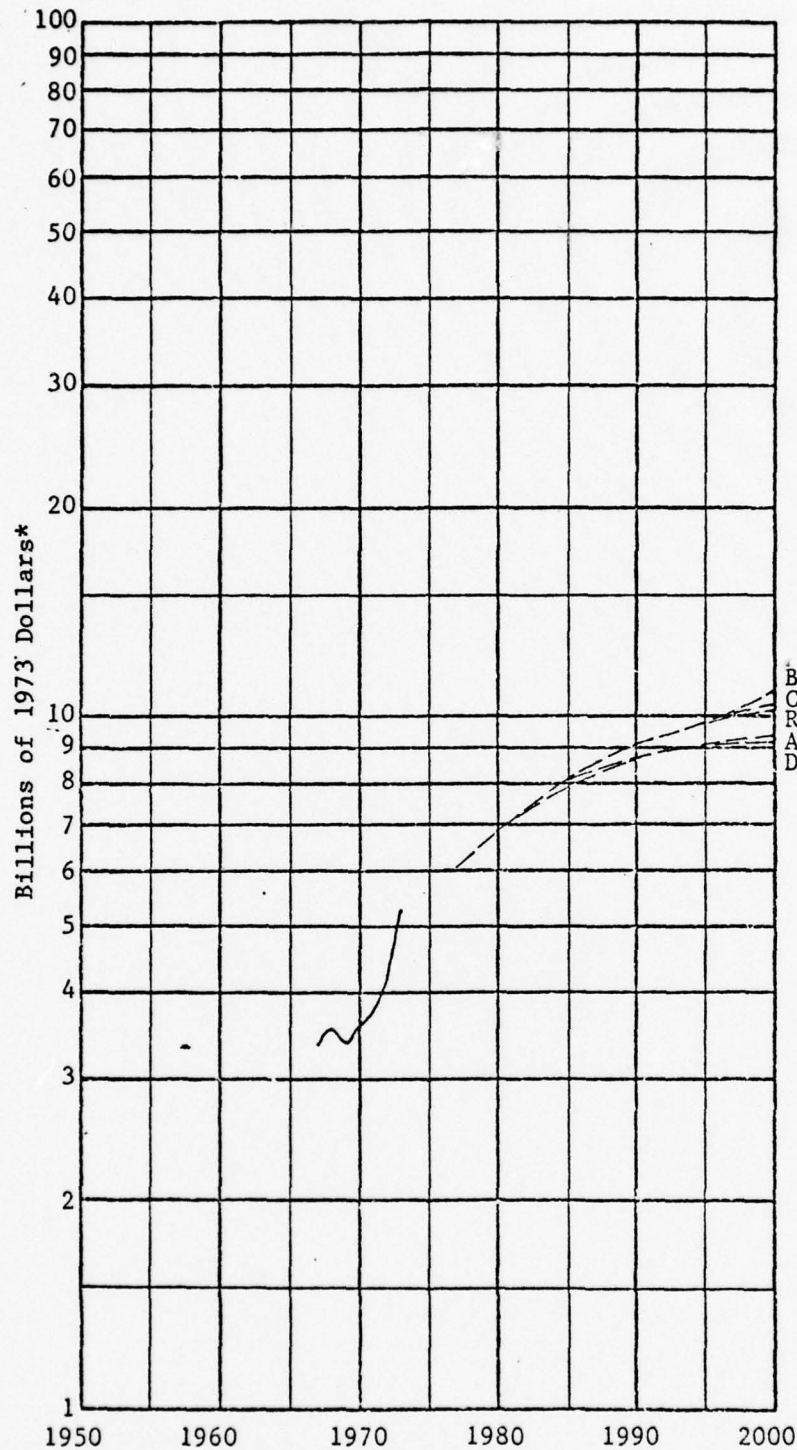
1950		1963	3.460
1951		1964	3.734
1952		1965	3.406
1953		1966	3.759
1954		1967	3.546
1955		1968	3.871
1956		1969	3.772
1957		1970	4.042
1958		1971	3.951
1959		1972	5.366
1960	4.274	1973	5.886
1961	4.145	1974	
1962	3.605	1975	

Projected Data

	S C E N A R I O				
	A	B	C	D	R
1976	5.451	5.451	5.451	5.451	5.451
1977	5.640	5.640	5.640	5.640	5.640
1978	5.834	5.839	5.840	5.833	5.839
1979	6.042	6.054	6.060	6.031	6.058
1980	6.264	6.285	6.302	6.234	6.297
1981	6.502	6.532	6.571	6.439	6.559
1982	6.755	6.795	6.866	6.649	6.841
1983	7.026	7.076	7.189	6.872	7.140
1984	7.319	7.376	7.537	7.114	7.459
1985	7.610	7.686	7.899	7.367	7.781
1986	7.912	8.005	8.269	7.638	8.101
1987	8.204	8.328	8.642	7.911	8.421
1988	8.488	8.656	9.017	8.189	8.740
1989	8.783	9.001	9.409	8.478	9.076
1990	9.091	9.364	9.818	8.778	9.432
1991	9.412	9.747	10.244	9.092	9.806
1992	9.751	10.148	10.692	9.422	10.206
1993	10.113	10.567	11.165	9.766	10.635
1994	10.500	11.007	11.671	10.125	11.095
1995	10.916	11.468	12.212	10.498	11.590
1996	11.363	11.953	12.792	10.888	12.122
1997	11.829	12.461	13.407	11.294	12.679
1998	12.318	12.995	14.061	11.723	13.264
1999	12.829	13.556	14.752	12.174	13.883
2000	13.364	14.148	15.479	12.652	14.533

*Adjusted by implicit price deflator for GDP for each country.

FIGURE 43. U.S. IMPORTS FROM LATIN AMERICA (BRAZIL, MEXICO, AND VENEZUELA)



SOURCE OF HISTORICAL DATA: U.S. Department of Commerce, Bureau of Economic Analysis, Business Statistics 1973 (Washington, D.C.: U.S. Government Printing Office, September 1973), pp. 115-116; Survey of Current Business, Vol. 55, No. 2 (February 1975), p. S-23, Vol. 56, No. 2 (February 1976), p. S-23, and No. 8 (August 1976), p. S-23.

*Adjusted by implicit price deflator for GDP for Japan.

Table 43

U.S. IMPORTS FROM LATIN AMERICA
(BRAZIL, MEXICO, AND VENEZUELA)
(Billions of 1973 Dollars*)

Historic Data

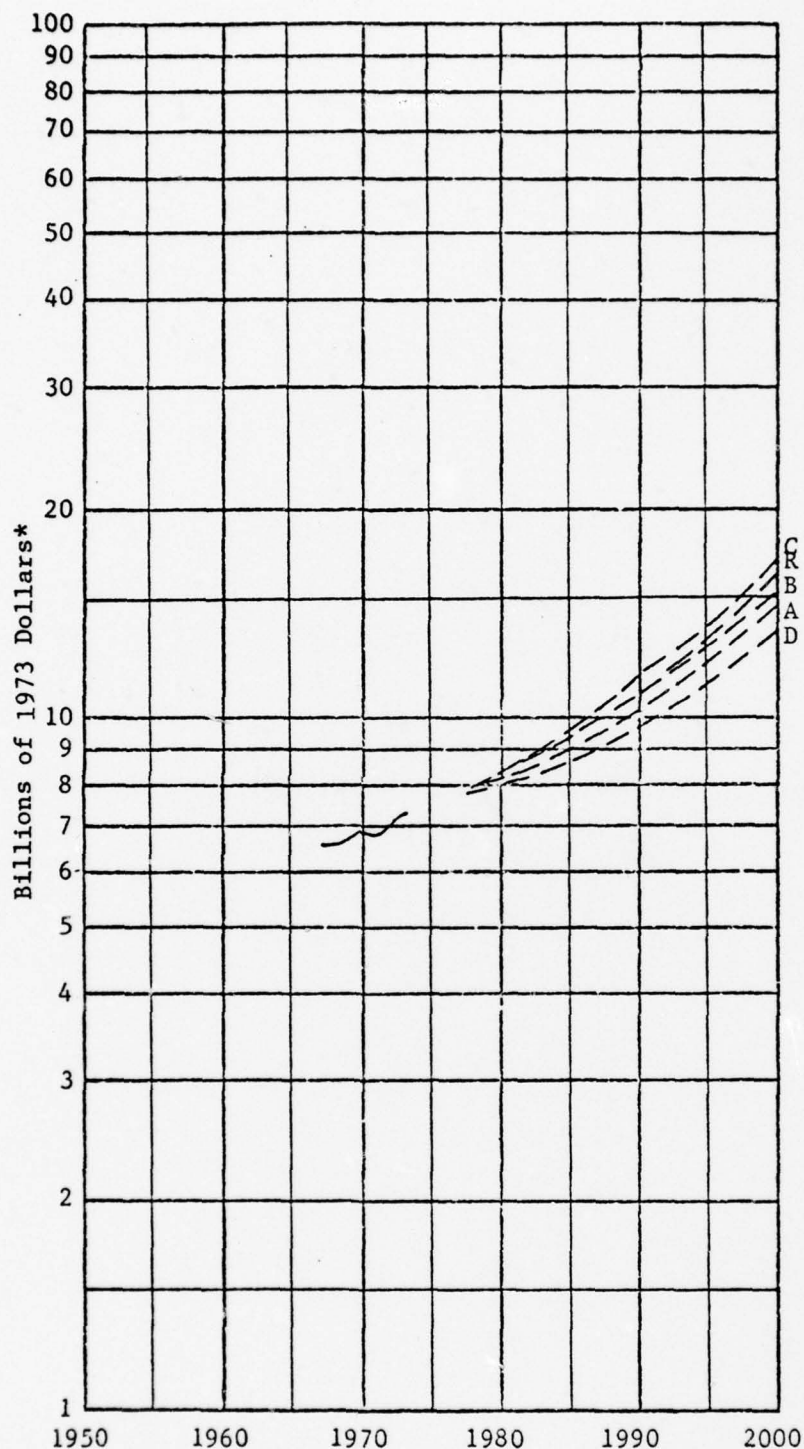
1950	1963	
1951	1964	
1952	1965	
1953	1966	
1954	1967	3.388
1955	1968	3.546
1956	1969	3.386
1957	1970	3.597
1958	1971	3.758
1959	1972	4.212
1960	1973	5.282
1961	1974	
1962	1975	

Projected Data

	S C E N A R I O				
	A	B	C	D	R
1976	5.758	5.758	5.758	5.758	5.758
1977	6.067	6.067	6.067	6.067	6.067
1978	6.359	6.368	6.367	6.358	6.364
1979	6.633	6.660	6.662	6.630	6.648
1980	6.890	6.943	6.956	6.879	6.923
1981	7.138	7.220	7.252	7.115	7.192
1982	7.379	7.486	7.549	7.341	7.452
1983	7.607	7.739	7.827	7.558	7.699
1984	7.818	7.977	8.085	7.765	7.931
1985	8.010	8.196	8.316	7.951	8.147
1986	8.185	8.402	8.526	8.124	8.352
1987	8.342	8.591	8.723	8.276	8.541
1988	8.480	8.765	8.906	8.410	8.713
1989	8.603	8.926	9.080	8.529	8.873
1990	8.710	9.077	9.240	8.634	9.021
1991	8.809	9.221	9.391	8.731	9.161
1992	8.902	9.355	9.530	8.820	9.299
1993	8.987	9.475	9.656	8.897	9.431
1994	9.067	9.584	9.773	8.965	9.559
1995	9.138	9.683	9.881	9.023	9.678
1996	9.199	9.775	9.981	9.072	9.788
1997	9.253	9.862	10.077	9.114	9.891
1998	9.298	9.943	10.167	9.148	9.988
1999	9.336	10.018	10.252	9.176	10.079
2000	9.367	10.089	10.332	9.198	10.164

*Adjusted by implicit price deflator for GDP for Japan.

FIGURE 44. U.S. DIRECT INVESTMENTS IN LATIN AMERICA
(BRAZIL, MEXICO, AND VENEZUELA)



SOURCE OF HISTORICAL DATA: "International Investment Position (Foreign Investments) of the United States (title varies)," Survey of Current Business, Vol. 44, No. 8 (August 1965), Table 2, p. 10; Vol. 45, No. 9 (September 1966), Table 2, p. 24; Vol. 46, No. 9 (September 1967), Table 5, p. 34; Vol. 47, No. 9 (September 1968), Table 3, p. 42; and Vol. 55, No. 8 (August 1976), Table 14, p. 49; also U.S. Department of Commerce Bureau of Economic Analysis, Revised Data Series on U.S. Direct Investments Abroad (Washington, D.C., n.d.), Tables 1-9, pp. 1-9.

*Adjusted by implicit price deflator for GDP for each country.

Table 44

U.S. DIRECT INVESTMENTS IN LATIN AMERICA
(BRAZIL, MEXICO, AND VENEZUELA)
(Billions of 1973 Dollars*)

Historic Data

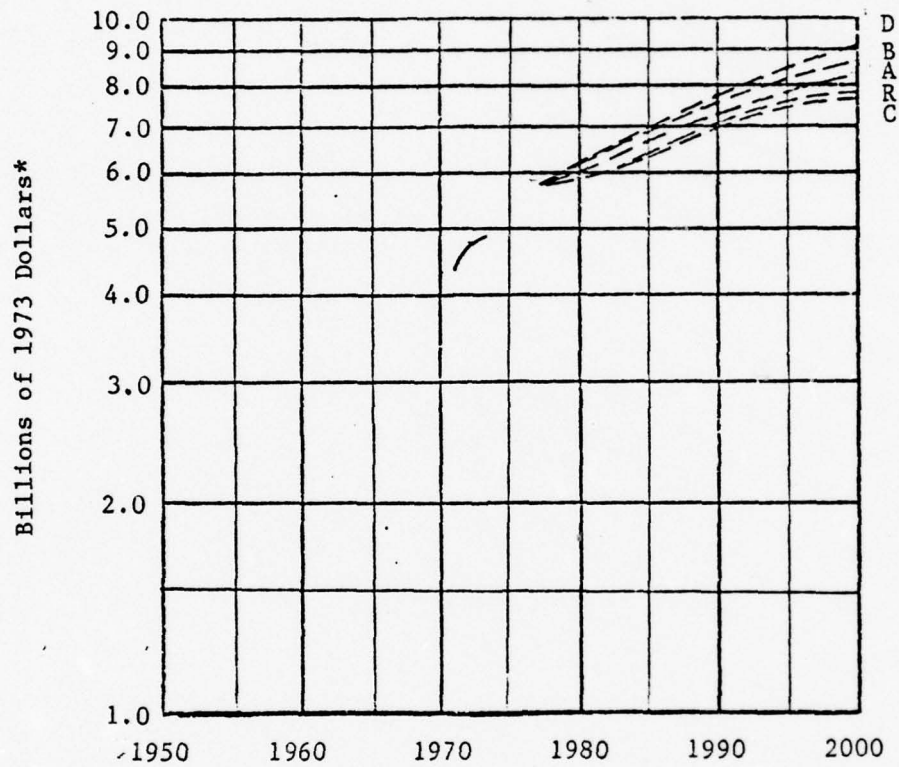
1950	1963	
1951	1964	
1952	1965	
1953	1966	
1954	1967	6.551
1955	1968	6.578
1956	1969	6.851
1957	1970	6.913
1958	1971	6.899
1959	1972	7.108
1960	1973	7.315
1961	1974	
1962	1975	

Projected Data

	S C E N A R I O				
	A	B	C	D	R
1976	7.705	7.705	7.705	7.705	7.705
1977	7.863	7.863	7.863	7.863	7.863
1978	8.004	8.021	8.028	7.992	8.008
1979	8.130	8.186	8.205	8.096	8.144
1980	8.249	8.361	8.403	8.177	8.283
1981	8.366	8.550	8.626	8.240	8.425
1982	8.497	8.751	8.871	8.312	8.590
1983	8.665	8.971	9.145	8.425	8.802
1984	8.865	9.205	9.443	8.573	9.050
1985	9.102	9.459	9.766	8.763	9.342
1986	9.370	9.734	10.109	8.995	9.670
1987	9.643	10.016	10.460	9.234	10.004
1988	9.922	10.308	10.822	9.483	10.349
1989	10.203	10.604	11.194	9.737	10.702
1990	10.486	10.904	11.574	9.990	11.057
1991	10.781	11.221	11.975	10.251	11.427
1992	11.087	11.552	12.394	10.520	11.815
1993	11.406	11.900	12.836	10.798	12.222
1994	11.745	12.271	13.305	11.092	12.661
1995	12.105	12.666	13.804	11.403	13.130
1996	12.487	13.085	14.341	11.733	13.632
1997	12.896	13.533	14.918	12.081	14.170
1998	13.334	14.014	15.540	12.454	14.747
1999	13.804	14.528	16.208	12.857	15.364
2000	14.309	15.082	16.929	13.293	16.208

*Adjusted by implicit price deflator for GDP for each country.

FIGURE 45. EXTERNAL PUBLIC DEBT OUTSTANDING (INCLUDING UNDISBURSED) TO UNITED STATES FOR LATIN AMERICA (BRAZIL, MEXICO, AND VENEZUELA)



SOURCE OF HISTORICAL DATA: World Bank, World Debt Tables, Volume I, External Public Debt. of LDC's, EC-167/75 (Washington, D.C., October 31, 1975), Table 6, pp. 29 and 34.

*Adjusted by implicit price deflator for GDP for each country.

Table 45

EXTERNAL PUBLIC DEBT OUTSTANDING (INCLUDING UNDISBURSED)
TO UNITED STATES FOR LATIN AMERICA (BRAZIL, MEXICO, AND VENEZUELA)
(Millions of 1973 Dollars*)

Historic Data

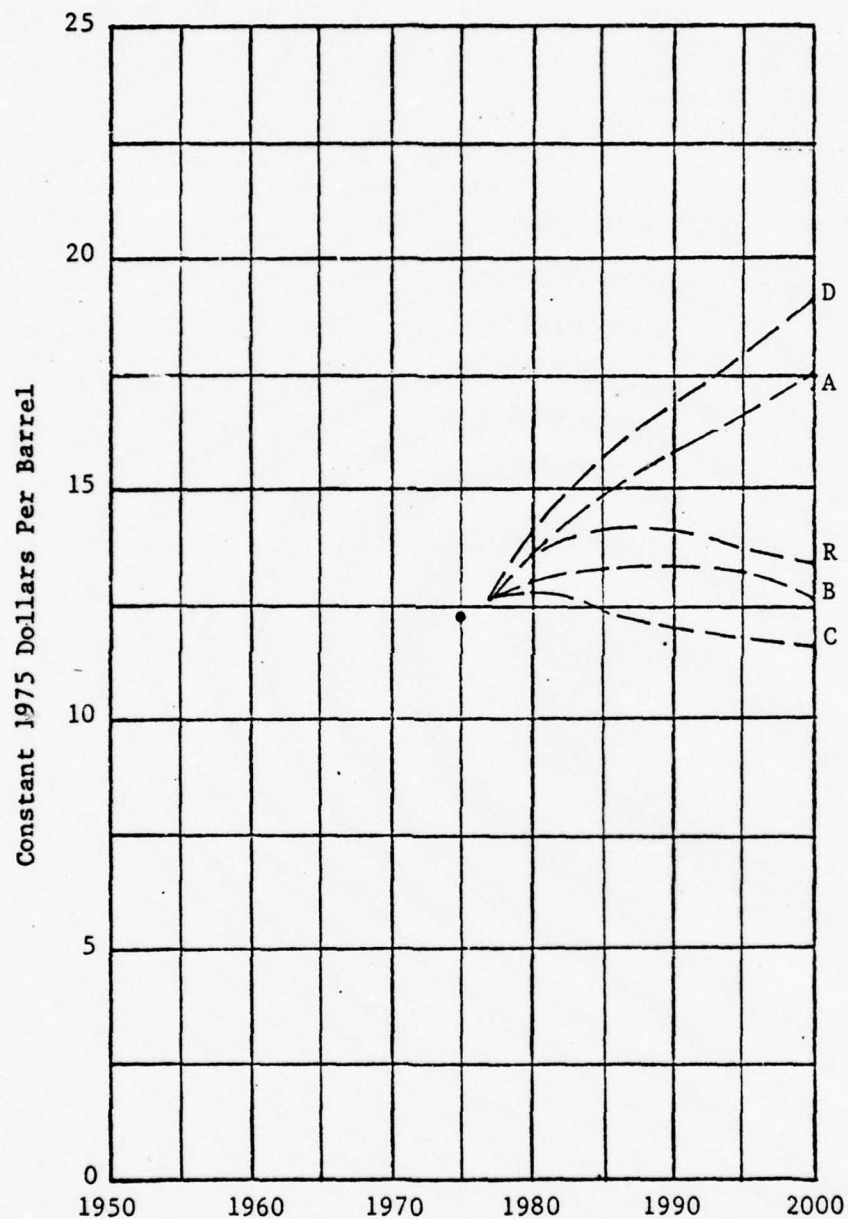
1950	1963	
1951	1964	
1952	1965	
1953	1966	
1954	1967	
1955	1968	
1956	1969	
1957	1970	
1958	1971	4323.00
1959	1972	4738.00
1960	1973	4805.00
1961	1974	
1962	1975	

Projected Data

	S C E N A R I O				
	A	B	C	D	R
1976	5540.32	5540.32	5540.32	5540.32	5540.32
1977	5754.47	5754.47	5754.47	5754.47	5754.47
1978	5815.36	5898.84	5866.32	5922.41	5824.58
1979	5862.42	6030.93	5964.95	6081.55	5880.90
1980	5899.38	6154.71	6050.56	6236.23	5925.77
1981	5925.01	6266.27	6115.79	6385.94	5956.66
1982	6084.41	6424.27	6253.42	6556.63	6103.70
1983	6239.26	6575.44	6374.89	6725.22	6242.30
1984	6231.88	6547.08	6316.42	6717.81	6212.95
1985	6387.08	6685.89	6415.24	6883.98	6342.35
1986	6691.15	6980.04	6657.27	7208.90	6615.32
1987	6836.06	7110.93	6742.70	7358.62	6728.15
1988	6975.47	7241.13	6831.81	7499.84	6834.76
1989	7112.06	7372.79	6927.60	7637.64	6935.29
1990	7247.82	7503.33	7029.84	7772.56	7032.77
1991	7380.58	7627.10	7130.41	7903.23	7125.59
1992	7498.63	7744.09	7198.65	8034.75	7206.84
1993	7615.11	7859.90	7266.74	8163.99	7288.38
1994	7728.38	7976.74	7335.70	8292.19	7369.48
1995	7837.38	8093.11	7401.58	8418.96	7448.13
1996	7941.87	8206.96	7463.28	8543.20	7523.51
1997	8041.91	8318.41	7520.93	8665.03	7595.75
1998	8133.25	8422.95	7570.51	8782.24	7656.13
1999	8215.66	8522.09	7614.83	8895.30	7707.98
2000	8298.08	8615.54	7650.82	9004.50	7751.50

*Adjusted by implicit price deflator for GDP for each country.

FIGURE 46. ESTIMATED LANDED COST IN UNITED STATES OF IMPORTED CRUDE PETROLEUM FROM SAUDI ARABIA



SOURCE OF HISTORICAL DATA: U.S. Federal Energy Administration, Monthly Energy Review, NTISUB/B/127-76/011 (November 1976), p. 68. Data point represents average for 12 months of 1975.

Table 46

ESTIMATED LANDED COST IN UNITED STATES OF
IMPORTED CRUDE PETROLEUM FROM SAUDI ARABIA
(Constant 1975 Dollars Per Barrel)

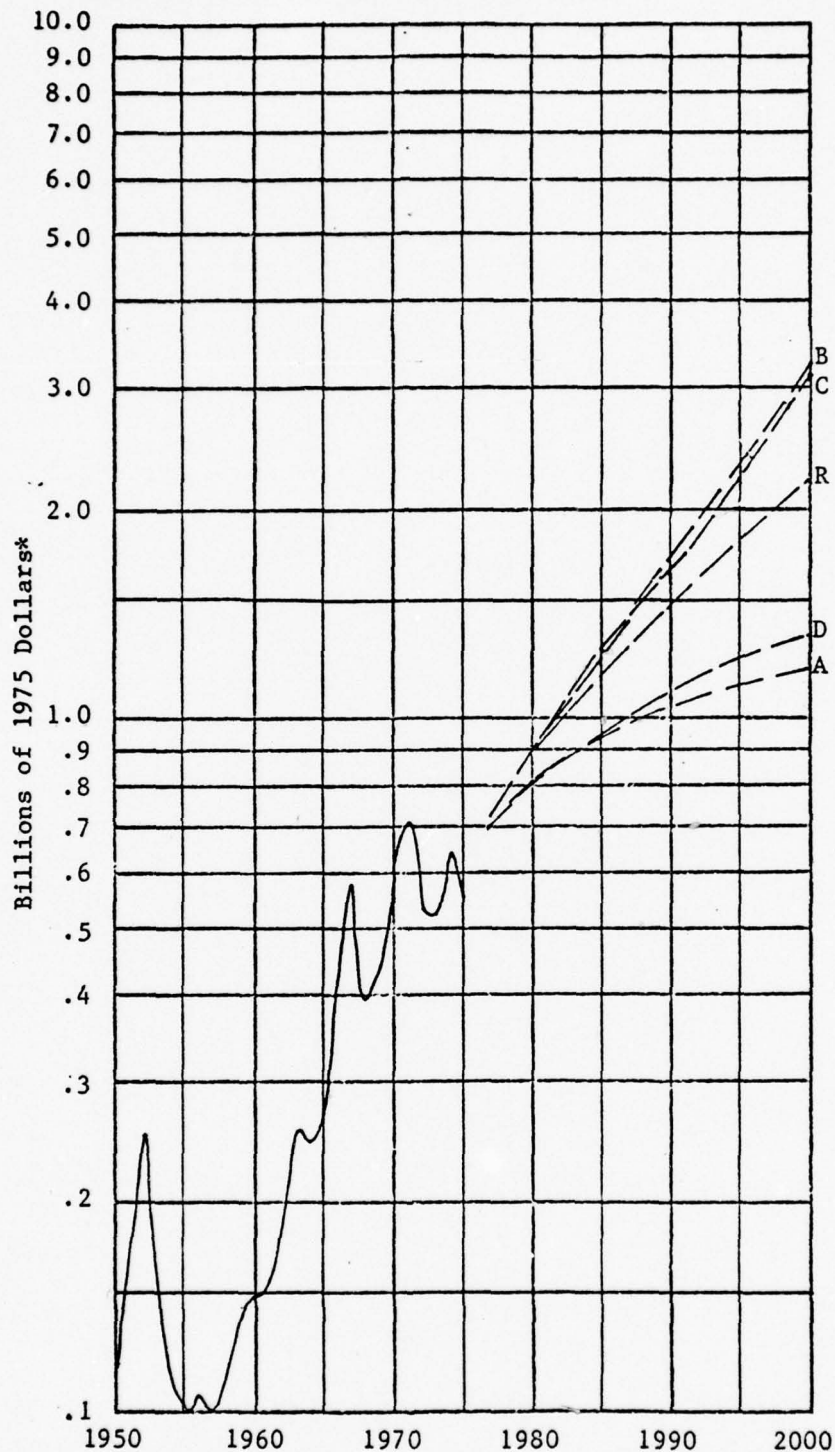
Historic Data

1950	1963
1951	1964
1952	1965
1953	1966
1954	1967
1955	1968
1956	1969
1957	1970
1958	1971
1959	1972
1960	1973
1961	1974
1962	1975
	12.22

Projected Data

	S C E N A R I O				
	A	B	C	D	R
1976	12.46	12.46	12.46	12.46	12.46
1977	12.71	12.71	12.71	12.71	12.71
1978	13.15	12.89	12.85	13.24	13.15
1979	13.53	12.86	12.80	13.71	13.53
1980	13.90	12.85	12.77	14.17	13.90
1981	14.28	12.87	12.79	14.64	14.27
1982	14.48	12.87	12.77	14.90	14.32
1983	14.67	12.95	12.73	15.20	14.31
1984	14.84	13.00	12.64	15.47	14.27
1985	14.95	13.00	12.49	15.69	14.19
1986	15.09	13.01	12.36	15.93	14.14
1987	15.24	13.02	12.24	16.17	14.11
1988	15.43	13.05	12.15	16.44	14.11
1989	15.63	13.07	12.05	16.71	14.13
1990	15.84	13.09	11.95	17.00	14.16
1991	16.06	13.11	11.85	17.28	14.18
1992	16.22	13.05	11.76	17.44	14.08
1993	16.39	13.00	11.77	17.61	13.95
1994	16.57	12.96	11.78	17.79	13.84
1995	16.74	12.91	11.77	17.97	13.72
1996	16.90	12.87	11.75	18.15	13.60
1997	17.07	12.83	11.73	18.35	13.49
1998	17.23	12.78	11.68	18.55	13.38
1999	17.39	12.72	11.61	18.75	13.27
2000	17.55	12.68	11.54	18.96	13.16

FIGURE 47. FEDERAL GOVERNMENT EXPENDITURES FOR AERONAUTICAL
NON-DEFENSE RESEARCH AND DEVELOPMENT



SOURCE OF HISTORICAL DATA: Charles R. Hudson, Jr., Research and Development Contributions To Aviation Progress (RADCAP), Vol. II, Appendices 1-9, U.S. Wright-Patterson Air Force Base, Aeronautical Systems Division, NASA-CR-129573 (Springfield, VA: National Technical Information Service, N73-13983, August 1972), Table 3, p. 14, with telephone update.

*Adjusted using the implicit price deflator for GNP.

Table 47

FEDERAL GOVERNMENT EXPENDITURES FOR AERONAUTICAL
NON-DEFENSE RESEARCH AND DEVELOPMENT
(Millions of 1975 Dollars*)

Historic Data

1950	119.40	1963	259.60
1951	146.70	1964	245.00
1952	254.50	1965	262.00
1953	170.70	1966	419.40
1954	119.40	1967	578.10
1955	100.20	1968	393.00
1956	105.20	1969	437.30
1957	99.80	1970	560.00
1958	115.60	1971	719.60
1959	143.20	1972	528.10
1960	148.30	1973	524.40
1961	154.30	1974	646.00
1962	194.80	1975	558.00

Projected Data

	S C E N A R I O				
	A	B	C	D	E
1976	649.20	649.20	697.46	649.20	649.20
1977	698.40	721.90	721.90	698.40	721.70
1978	738.17	781.82	782.24	737.57	777.33
1979	777.12	844.06	845.64	770.49	829.47
1980	813.30	907.93	911.46	805.19	890.04
1981	846.36	971.67	975.79	840.79	947.86
1982	878.42	1038.63	1043.58	875.67	1004.28
1983	907.33	1107.56	1112.65	909.64	1059.61
1984	933.76	1178.71	1185.56	941.92	1116.59
1985	953.79	1253.05	1258.98	968.90	1173.77
1986	972.04	1337.06	1340.90	992.68	1223.91
1987	987.67	1425.59	1427.73	1015.68	1285.00
1988	1002.41	1519.04	1518.33	1039.55	1346.99
1989	1018.32	1621.58	1618.64	1062.75	1410.12
1990	1033.71	1728.53	1645.39	1086.71	1469.20
1991	1050.00	1841.40	1833.45	1111.43	1530.81
1992	1066.94	1964.50	1952.20	1135.95	1594.00
1993	1082.97	2093.49	2075.26	1160.90	1657.82
1994	1099.71	2231.64	2203.69	1184.61	1723.20
1995	1112.84	2375.49	2339.87	1207.11	1790.76
1996	1126.89	2525.54	2482.97	1229.66	1860.84
1997	1140.27	2684.03	2633.10	1253.05	1932.65
1998	1154.42	2264.04	2791.83	1274.95	2007.64
1999	1168.70	3027.28	2958.52	1296.85	2084.40
2000	1182.82	3212.48	3133.69	1316.69	2163.34

*Adjusted using the implicit price deflator for GNP.

2.206

MAJOR SCENARIO EVENTS

Rationale for Choosing Key Events

A set of key events was selected by the study team for each of the scenarios. These events were judged to be closely related to the scenario development and therefore likely to occur in the scenario for which they were key. The key events are used in structuring the narratives of the scenarios, and in this way, the key events act to differentiate the alternative worlds.

The study team used the following definition of a key event:

- A key event by its occurrence gives the scenario plausibility and helps define the scenario characteristics.

Table 48 identifies the key events for each scenario. The table is followed by an explanation for the selection of the key events.

Table 48

Key Event for Each ScenarioResource Allocation, Scenario R

- Event 11. Telecommunications reduce the amount of all travel by 20 percent.
- Event 40. Nuclear stations contribute 75 percent of electrical energy.
- Event 56. One-half of consumer durables are fabricated using recycled materials.
- Event 75. A national program of socialized medicine is established.
- Event 76. A land-use bill which requires states to develop Federally approved zoning plans is passed.
- Event 84. Federal Government assumes full responsibility for public aid payments.
- Event 174. The United States and other developed countries negotiate multilateral agreements with LDC's assuring access to raw material supplies for consumer nations and stable export earnings for producing nations.

Limited Growth, Scenario A

- Event 11. Telecommunications reduces the amount of all travel by 20 percent.
- Event 45. A national program for raw material resource rationing is established.
- Event 51. Developing countries form cartels for key raw materials: bauxite, manganese, tin, and chromium.
- Event 55. Wage, price, profit, and interest rate controls are permanently established.
- Event 78. Federal funds for community development to revitalize cities increases threefold over the 1975 level. (Community funds totaled \$3.2 billion in 1975.)
- Event 97. Middle-class attitudes toward work are challenged by the rise in avocational interests, resulting in decreased demands for career advancement opportunities.

Expansive Growth, Scenario B

- Event 40. Coal and nuclear stations contribute 75 percent of electrical energy.
- Event 67. The prices of all energy products are totally deregulated.
- Event 151. Corporate income tax rate is reduced by 50 percent from 1975 levels.
- Event 152. Federal Reserve adopts constant growth policy as regards the monetary aggregates (i.e., M_2 grows at 6 percent) and thus dispenses with monetary policy as a discretionary tool and the Federal Budget is balanced.
- Event 171. OPEC dissolves.

Individual Affluence, Scenario C

- Event 13. The marriage rate declines to eight per thousand population (a little over ten per thousand in 1975).
- Event 40. Coal and nuclear stations contribute 75 percent of electrical energy.
- Event 63. R&D spending in the United States increases from the 1975 level of 2.5 percent of GNP to 5 percent of GNP.
- Event 76. A land-use bill which requires states to develop Federally-approved zoning plans is passed.
- Event 96. Fifty percent of assembly line production is controlled by computers.
- Event 111. Automated individual instruction is introduced at all educational levels.
- Event 171. OPEC dissolves.

Hardships, Scenario D

- Event 46. Environmentally acceptable pest control fails to provide adequate crop protection.
- Event 53. Capital resources are not able to meet long-term investment needs of industry.
- Event 59. A publicly owned petroleum company which supplies 70 percent of the domestic market is established.
- Event 65. The transportation, communication, and energy industries become either public or quasi-public enterprises.
- Event 100. Coal production fails to reach projected levels because of labor problems, inadequate transportation, and environmental constraints.
- Event 172. European Community and Japan erect prohibitive trade and investment restrictions which effectively deny market access to the United States.

RESOURCE ALLOCATION, SCENARIO REvent 11. Telecommunications reduce the amount of all travel by 20 percent.

Government in Scenario R, in implementing resource allocation policies, uses cost-benefit analysis for long-term social planning. Telecommunications are perceived as a resource conserving alternative to travel and as providing a high ratio of benefit to cost.

Event 40. Nuclear stations contribute 75 percent of electrical energy.

In Scenario R, balance between domestic and foreign resource supplies and demand is achieved through government regulation, with adequate support from technological development. Domestic resource development emphasizes coal and nuclear power, particularly for inputs to electrical generation. The overall environmental effects are found to be acceptable, and the shift away from oil reduces pressure on the overall oil demand.

Event 56. One-half of consumer durables are fabricated using recycled materials.

In this scenario a high emphasis is placed on the use of recyclable materials in order to relieve potential material shortages. Elevated social consciousness with regard to resource conservation makes for economical collection and processing of discarded goods. Recycling is perceived as providing long-term benefits in terms of both resource usage and environmental effects. Recycling is found to be economical when all social costs are evaluated.

Event 75. A national program of socialized medicine is established.

The allocative function of government in this scenario is carried through to the delivery of certain social services, including medicine. Emphasis placed on family planning and health care is seen as providing a high ratio of benefit to cost.

Event 76. A land-use bill which requires states to develop Federally approved zoning plans is passed.

In this scenario the planning function of the Federal Government necessarily involves the government in the disposition of land. Urban growth is characterized by the development of megalopolis structures, and the Federal Government, through its participation in local and regional planning, attempts to assure the best disposition from the point of view of resource usage and social equity.

Event 84. Federal Government assumes full responsibility for public aid payments.

Standardization of the social welfare system is seen in the scenario as the proper role of the Federal Government to assure equitable allocation.

Event 174. The United States and other developed countries negotiate multilateral agreements with LDC's assuring access to raw material supplies for consumer nations and stable export earnings for producing nations.

In this scenario the government actively cooperates to regulate the flow of goods and materials, both domestically and abroad. Successful resolution of resource problems in the United States makes it possible for it to establish mutually beneficial relationships with less developed countries. The willingness of LDC's to realize stable multilateral agreements is brought about by their desire to emulate U.S. solutions and their willingness to cooperate in mutually fair relationships.

LIMITED GROWTH, SCENARIO A

Event 11. Telecommunications reduces the amount of all travel by 20 percent.

The emphasis on the conservation of resources in Scenario A encourages the use of telecommunications as an alternative to travel. Through govern-

ment policy, telecommunications are introduced in early childhood supervision and schooling to ensure acceptance of the medium as an alternative to direct personal interactions.

Event 45. A national program for raw material resource rationing is established.

The low growth policies of Scenario A limit new domestic supplies. Government finds a rationing program helpful in controlling demand and apportioning resources equitably.

Event 51. Developing countries form cartels for key raw materials bauxite, manganese, tin, and chromium.

The insularity which develops in the United States in Scenario A is coincident with the rise of resource coalitions abroad. A strong impetus to the development of the limited growth philosophy is provided by the action of these coalitions in controlling the price and supplies of these raw materials.

Event 55. Wage, price, profit, and interest rate controls are permanently established.

This event is an expression of the behavior of a centrally controlled economy determined to control economic growth.

Event 78. Federal funds for community development to revitalize cities increases threefold over the 1975 level. (Community funds totaled \$3.2 billion in 1975.)

Increased population densities through urbanization are seen as a more resource efficient way for the delivery of services. Redevelopment of established urban areas as an alternative to expansion is a major policy for stabilizing growth.

Event 97. Middle-class attitudes toward work are challenged by the rise in avocational interests, resulting in decreased demands for career advancement opportunities.

The deliberate attenuation in growth due to government control necessarily limits work related opportunities. In this scenario leisure pursuits which make less demand on materials and energy resources are promoted and account for an increasing portion of individual satisfaction.

EXPANSIVE GROWTH, SCENARIO B

Event 40. Coal and nuclear stations contribute 75 percent of electrical energy.

The high productivity of Scenario B requires greatly expanded sources of energy. Achieving high domestic energy production exerts a controlling leverage over foreign suppliers, and resource coalitions prove to be ineffective. Coal and nuclear sources are emphasized for the production of electricity, and help reduce pressure on oil.

Event 67. The prices of all energy products are totally deregulated.

In this scenario technological progress makes energy supplies abundantly available. This achievement is brought about by giving free rein to competing energy industries, with little government interference or control.

Event 151. Corporate income tax rate is reduced by 50 percent from 1975 levels.

In this scenario private industry is maximally encouraged. Industry takes advantage of reduced tax levels to provide funds for its expansion.

Event 152. Federal Reserve adopts constant growth policy as regards the monetary aggregates (i.e., M_2 grows at 6 percent) and thus dispenses with monetary policy as a discretionary tool and the Federal Budget is balanced.

The success of Scenario B is characterized by its rapid economic growth. Government interference with monetary flows proves to be unnecessary. The growth of Federal expenditures is slowed with the decreasing burden on government services.

Event 171. OPEC dissolves.

The energy achievements of the United States are assumed to be matched in other developed countries, and the leverage of cartels and foreign resource coalitions is minimized. The high energy needs of this scenario will require unconstrained access to all resources.

INDIVIDUAL AFFLUENCE, SCENARIO C

Event 13. The marriage rate declines to eight per thousand population (a little over ten per thousand in 1975).

The goal of the scenario is zero population growth. Emphasis on individual achievement and self-expression tends to delay marriage. Marriages also tend to be more stable and the divorce rate (and hence the marriage rate) also declines.

Event 40. Coal and nuclear stations contribute 75 percent of electrical energy.

Scenario C is a highly energy-intensive society. Emphasis is placed on the development of all domestic resources, which are successfully exploited within acceptable environmental guidelines. Shifts away from using oil for electricity generation help reduce overall pressure on oil.

Event 63. R&D spending in the United States increases from the 1975 level of 2.5 percent of GNP to 5 percent of GNP.

In Scenario C continued technological progress is seen to be the key to individual affluence. This technological progress is carried into all areas of life, with heavy development of automation to provide increased measures of individual freedom.

Event 76. A land-use bill which requires states to develop Federally-approved zoning plans is passed.

The success of Scenario C derives from the successful planning of a highly centralized government. Planning is coordinated on a local, regional, and national level. The Federal Government is seen as a prime mover in this scenario, cooperating and participating in all phases of community development.

Event 96. Fifty percent of assembly line production is controlled by computers.

The application of advanced technology is required to sustain the affluence conditions of the scenario. Expansion of automation increases productivity and contributes to achieving high levels of individual affluence.

Event 111. Automated individual instruction is introduced at all educational levels.

This advanced technological society has high requirements for improving learning efficiencies. A high quality of education is required in Scenario C to take full advantage of the vocational and cultural benefits which are available.

Event 171. OPEC dissolves.

The expansion of domestic resources using advanced technologies to achieve new sources or to provide for new resource material substitutions weakens the influence of foreign resource coalitions in this scenario. The high energy needs of this scenario require unconstrained access to all resources.

HARDSHIPS, SCENARIO D

Event 46. Environmentally acceptable pest control fails to provide adequate crop protection.

In the field of agriculture there is an acute failure of technology. As with energy problems, Scenario D's government is characterized by its inability to reconcile the accelerating demand of a growing population with acceptable environmental attitudes.

Event 53. Capital resources are not able to meet long-term investment needs of industry.

Aggravated economic conditions and the general slowdown of the economy result in and are exacerbated by the loss of confidence of industry to achieve long-range goals. The pessimistic and uncertain view of the future, coupled with the depressed economic conditions at hand, inhibit investment supply and demand.

Event 59. A publicly owned petroleum company which supplies 20 percent of the domestic market is established.

Take-over of a major oil company is forced upon the Federal Government as an attempt to provide funds for exploration and exploitation of new domestic oil sources.

Event 65. The transportation, communication, and energy industries become either public or quasi-public enterprises

Scenario D represents a fumbling governmental attack on socioeconomic problems. As major segments of the primary industries fail, the government is dragged more into their control. Ultimately a takeover or partial takeover is considered.

Event 100. Coal production fails to reach projected levels because of labor problems, inadequate transportation, and environmental constraints.

This event encapsulates the problems of Scenario D, which are characterized by the inability to harmonize supply and demand. Much of the scenario tension derives from the failure of technology to achieve anticipated developments, particularly in the area of domestic energy resources.

Event 172. European Community and Japan erect prohibitive trade and investment restrictions which effectively deny market access to the United States.

The difficulty in securing domestic supplies of fundamental resources in the United States places it at the mercy of foreign resource coalitions. Western nation leadership falters in this scenario, and other nations faced with similar threats from resource coalitions tend to cut themselves free of U.S. economic influence, which has waned, and to establish themselves more independently.

Key and NAS Event Probability Rationale

Probabilities for each event were assigned for the years 1980, 1990, and 2000. The likelihood of the occurrence of an event will depend on the scenario characteristics; that is, the event probability will be highest when the scenario development is most closely related to or supporting of the circumstances described in the event. Probabilities are therefore assigned by making judgments on how relevant the event is to the world of each scenario.

The probabilities for the occurrence of each event in each scenario were established by team judgment. For the key events and for a set of events which were selected because of their special relevance to the National Aviation System (NAS), the judgments were reviewed by the entire study team. Where there were differences among the team members, a consensus on the probability selection was obtained by averaging the probability judgments of all of the team members.

In this section the rationale for the event probability assignments is given for all of the key and NAS events. The key events are starred.

Event 1: Establishment of 10 new resorts comparable to Disneyworld.

PROBABILITY OF EVENT

Scenario														
A			B			C			D			R		
1930	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000
.05	.20	.40	.15	.60	.70	.10	.50	.60	0	.10	.10	.10	.20	.40

The event is considered likely in Scenario B; levels of affluence will produce the demand necessary to support such resorts. The probability in Scenario C is somewhat less than in Scenario B because establishment of resorts of this magnitude in this centrally directed scenario would require Federal approval in terms of land use.

The event is unlikely in both Scenarios R and A where there may be efforts to minimize deliberate promotion of travel.

The event is improbable in Scenario D because economic conditions will not support such resorts.

Event 7: Federal guidelines are developed to serve as a voluntary framework for planning population distribution among the various states and regions.

PROBABILITY OF EVENT

Scenario														
A			B			C			D			R		
1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000
.40	.60	.70	.10	.20	.30	.50	.70	.80	.05	.10	.20	.50	.70	.75

The event is likely in Scenarios C and R because both have a high degree of central planning. It is also likely in Scenario A for the same

reason; here, however, limited growth may be a mitigating factor in the need to use such guidelines.

The event is unlikely in Scenario B where, despite the high rate of economic and industrial expansion, government interference is minimized.

The event is unlikely in Scenario D in which the capacity of the government to pursue effective long-range plans proves inadequate.

Event 10: *New cities are developed proximate to natural resources.*

PROBABILITY OF EVENT

Scenario														
A			B			C			D			R		
1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000
0	.20	.30	0	.40	.55	0	.60	.70	0	.20	.30	0	.75	.90

The new city was defined as requiring 50,000 residents, and it was assumed that five new cities are implied by this event. The event is likely in Scenario R; desire to maximize the effective distribution and use of resources will make the government take action to stimulate the location of cities near resources so that pressures will be removed from the transportation system.

The event is likely in Scenario C, where such cities will be encouraged by central planning for resource development. The probability in Scenario C is smaller than in Scenario R because there is less need to remove pressures from the transportation system.

The probability for this event in Scenario B is only somewhat better than 50 percent by the year 2000 because the role of government is less involved in planning than in either Scenarios R or C. An adequate transportation system exists in Scenario B; however, the expansive movement of

the society and a certain emphasis on decentralization gives the event a reasonable chance of occurring.

The event is unlikely in Scenario A where limited growth policies tend to discourage the development of new urban areas. It also is unlikely in Scenario D where difficulties with the economy and ineffective government management prevent such expansion.

**Event 11: Use of telecommunications reduces the amount of all travel by 20 percent.*

PROBABILITY OF EVENT

Scenario														
A			B			C			D			R		
1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000
.05	.50	.70	0	.30	.50	0	.30	.40	0	.20	.30	0	.60	.80

The probability of the event occurring by 1980 is low because of the great difficulty of implementing a telecommunications system that would have an appreciable effect on transportation in so short a time. The 1980 probability for Scenario A, however, is 5 percent rather than 0 because in this scenario there is a deliberate attempt to encourage the reduction in transportation and to promote the use of telecommunications. The probabilities are highest in Scenarios A and R where telecommunications are perceived in these scenarios as providing a cost-effective alternative to travel.

Because the levels of affluence in Scenarios B and C suggest increasing travel for both business and pleasure, the probability of telecommunications substituting for travel is not likely. In both of these scenarios, however, the level of affluence will promote development of telecommunications, but it is more likely to be used as an adjunct to travel rather than a substitute for it.

*Key events are designated by asterisks in this section.

The event has a low probability in Scenario D because difficult economic conditions remove much of the impetus for travel. However, inadequacies in the transportation system will have some influence on the use of telecommunications to avoid the discomforts of travel.

**Event 13: The marriage rate declines to 8 per 1000 population (a little over 10 per 1000 population in 1975).*

PROBABILITY OF EVENT

Scenario														
A			B			C			D			R		
1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000
.20	.50	.60	.10	.40	.55	.20	.50	.70	.20	.30	.40	.20	.45	.55

This event is likely by the year 2000 in Scenario C where emphasis on individual achievement and self-expression tend to delay marriage and also to result in more mature and stable relationships. In Scenario A as well as in Scenario C there is emphasis on decreasing population growth, and in both scenarios the rate of family formation and marriages tend to decline.

While the first marriage rate may not decline in Scenario R, the re-marriage rate (resulting from divorces) does decline because of the wider delivery of health services and mental health counseling. The probability for the event, therefore, has a better than even chance in Scenario R.

In Scenario B the emphasis on home and community life tends to increase the first marriage rate, and the event has an only better than even chance.

The event is unlikely in Scenario D, where difficult societal conditions tend to make people seek personal security in marriage. In Scenario D, first marriages stay at a high rate, but economic stress also tends to increase the divorce rate and hence the re-marriage rate.

Event 23: Synthetic gas from coal is commercially available.

PROBABILITY OF EVENT

Scenario

A			B			C			D			R		
1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000
.10	.20	.30	.10	.60	.80	.10	.50	.60	.10	.15	.20	.10	.15	.60

The event is likely in Scenario B in which technology will be very successful in providing energy from a number of alternative sources. The event has a lower probability in Scenario C because while technology is also successful in this scenario, the level of demand for energy will be lower than in Scenario B. The lower probability for this event in Scenario R is due to the fact that all technologies must compete in terms of total social costs and that not all, therefore, will be developed at the same rate.

The event is considered unlikely in Scenario A where there is both limited technological success and attenuation in the demand for energy. Difficult economic conditions of Scenario D will not allow sufficient R&D for this event to occur.

Event 30: Offshore terminals and refineries are established on the East Coast to provide a capacity approaching area demand for oil products.

PROBABILITY OF EVENT

Scenario

A			B			C			D			R		
1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000
0	.25	.30	0	.40	.60	0	.35	.55	0	.20	.25	0	.30	.40

The event is moderately likely by the year 2000 in Scenario B because of the expected high demand of all available energy sources including oil. The

probability in Scenario C is slightly less than in Scenario B because emphasis on environmental factors will work against its occurrence.

The event has lower probabilities in Scenarios A and R because of the reduced petroleum demand from the high-growth Scenarios B and C, and because of the particular emphasis on environmental considerations in both scenarios. It has the lowest probability in Scenario D because capital availability problems will put such a project a low priority.

Event 34: The Atlantic outer continental shelf produces 1 million barrels of oil per day.

PROBABILITY OF EVENT

Scenario A			Scenario B			Scenario C			Scenario D			Scenario R		
1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000
0	.20	.25	0	.40	.50	0	.30	.40	0	.15	.15	0	.30	.35

The generally low probabilities for all scenarios are due to the high oil productivity called for in the event. The highest probabilities are found in Scenarios B and C because of their demand for energy products, including oil. The lower probabilities for Scenarios A and R essentially reflect a lower demand, while the low probability for Scenario D is because of the inability to produce the necessary funding.

**Event 40: Coal and nuclear stations contribute 75 percent of electrical energy.*

PROBABILITY OF EVENT

Scenario A			Scenario B			Scenario C			Scenario D			Scenario R		
1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000
0	.10	.30	0	.40	.60	0	.40	.50	0	.10	.15	0	.60	.80

This event has zero probability in 1980 for all scenarios because of the short time span. In Scenarios R, B, and C high emphasis is placed on developing domestic energy resources. In Scenario R, however, coal and nuclear energy for electric generation prove to be most favorable allocation of these resources. Expansion of domestic oil resources in Scenarios B and C tends to offset the thrust toward the use of coal, and hence the probabilities of this event are lower than in Scenario R.

The event is unlikely in Scenario A. Policies of limited growth result in an attenuation in demand and limit the development of coal and nuclear power. The event is substantially improbable in Scenario D because economic difficulties make it impossible to fully utilize domestic resources.

Event 42: Non-petroleum sources of primary power for ground transportation (storage batteries, fuel cells, electro-magnetic propulsion and the like) account for one quarter of the transportation energy demand.

PROBABILITY OF EVENT

Scenario A			Scenario B			Scenario C			Scenario D			Scenario R		
1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000
0	.10	.15	0	.30	.55	0	.30	.65	0	.05	.10	0	.30	.40

The generally low probabilities before 2000 in all scenarios is because of the degree of substitution for petroleum called for by the event. Scenario

C has the highest probability for this event by the year 2000 because of the need for non-polluting transportation in highly aggregated urban environments. In Scenario C there will be development of the necessary advanced technology.

The probability in Scenario B is less than in Scenario C primarily because of the lower emphasis on urbanization patterns and the continuing development of suburban areas which will still be accessible to petroleum-burning vehicles.

The event has a less than even chance by 2000 in Scenario R largely because the technological developments will not be as rapid in this scenario as in Scenarios B and C.

In Scenario A extensive use of mass transit coupled with a lowering in transportation demand make the event unlikely.

The event is improbable in Scenario D because of limited technological developments.

**Event 45: A national program for raw material resource rationing is established.*

PROBABILITY OF EVENT

Scenario														
A			B			C			D			R		
1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000
.15	.50	.65	0	0	0	0	0	0	.05	.25	.40	.15	.50	.75

The event is most likely in Scenario R by the year 2000 as an aid to resource allocation policies. The event was given an even chance by 1990 for both Scenarios A and R, where policies controlling the use of resources in both scenarios could lead to the implementation of such a rationing program. The probability for the year 2000 in Scenario A, however,

is less than that of Scenario R for the same year because it was assumed that policies of limited growth succeed in attenuating demand and somewhat lessen the need for rationing.

The event is seen as consistent with the material problems besetting Scenario D. The probability, however, only reaches 40 percent by the year 2000 because the ineffective government in Scenario D would have difficulty implementing such a measure.

The event has a zero probability of occurring throughout the period in both Scenarios B and C, where it is assumed that technological developments have allowed resources to continue to keep pace with demand.

**Event 46: Environmentally acceptable pest control fails to provide adequate crop protection.*

PROBABILITY OF EVENT

Scenario														
A			B			C			D			R		
1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000
.10	.30	.50	.05	.10	.10	.05	.10	.15	.10	.60	.80	.10	.30	.40

The event is quite likely in Scenario D where all technological developments have been constrained. One of the circumstances which causes economic disequilibrium in this scenario is the fact that environmental constraints cannot be resolved, and this impacts on economic growth. In Scenario A the event has only an even chance of occurring by the year 2000 because while there is strong environmentalism, technological developments are more successful in Scenario A than in Scenario D. The probabilities in Scenario R are less than in Scenario A because more developed technology will help resolve environmental conflict.

The event is rather unlikely in Scenarios B and C where technological developments keep pace with environmental constraints. The probability in Scenario B by the year 2000 is less likely than in Scenario C, reflecting a somewhat less rigid attitude toward environmentalism.

Event 47: More than 10,000 miles of the interstate highway system are electrified and automated to accommodate dual-mode automobiles.

PROBABILITY OF EVENT

Scenario														
A			B			C			D			R		
1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000
0	.10	.20	0	.30	.50	0	.40	.70	0	.05	.10	0	.20	.40

The event is likely by the year 2000 in Scenario C because of the advanced state of technology. It has a lower probability in Scenario B where emphasis on environmental factors, as well as conservation of resources, are somewhat less important than in Scenario C.

The event is given a less than even chance of occurring in Scenario R because development of cost-effective public transportation is expected to make inroads on the use of private vehicles.

The event is unlikely in Scenario A where limited growth policies seek to limit transportation demand. It is improbable in Scenario D where technological achievements are severely limited in conditions of economic hardship.

**Event 51: Developing countries form cartels for key raw materials: bauxite, manganese, tin, and chromium.*

PROBABILITY OF EVENT

Scenario														
A			B			C			D			R		
1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000
.25	.70	.90	.10	.20	.30	.10	.15	.15	.25	.40	.55	.10	.40	.40

Less developed country (LDC) cartels are integral to Scenario A. They are important factors in the relatively low level of economic growth, as well as reflections of both the relative lack of U.S. influence in the world and the adversary character of U.S.-LDC relations. However, as we approach 2000 and the high prices extracted for these minerals begin to further suppress economic growth, declining level of demand in developed countries places increased pressure on raw material exporters to compete in increasing their markets.

In Scenario B, just the reverse is true. Here, the United States has succeeded in achieving technological solutions to the problem of resource imbalance thus enhancing its invulnerability to cartels. Furthermore, the United States maintains a much more active and influential role among less developed countries. Finally, there is an expansion in the reach of American technology, as U.S. companies intensively mine manganese nodules in the deep sea bed. The collective result of these forces is a very low probability for the event, with perhaps a slight increase around 1990 as less developed country resentment accumulates.

In Scenario C the possibilities for resource cartels are diminished still further. Not only does the United States achieve rapid innovation in extractive technologies and also derives increased amounts of resources

from the deep sea bed, but its policies toward less developed countries are much more accommodating. This sensitivity to the need of LDC's for increased revenue from exports tends to deflate the current resentment that less developed countries feel toward developed resource consumers. The effect of this decreased resentment is an acceptance by LDC's of current raw material trade arrangements.

In Scenario D there are certain conditions that would seem to support cohesion among less developed country resource exporters. These conditions include lack of U.S. influence within less developed countries, relative stagnation in technological innovation among developed countries, and a lack of U.S. sympathy for the aspirations of less developed countries. However, the level of demand for raw materials in this scenario is low enough so that the economic preconditions for cartels are less compelling. Efforts on the part of less developed countries to artificially restrict supply of raw materials might redound to their disadvantage by suppressing any fledgling efforts to increase growth among developed countries, and this perception reduces their flexibility between 1990 and 2000.

Scenario R posits continued growth in U.S. demand for materials, and this keeps the United States still vulnerable to raw material exporters. However, there develops in this scenario a growing cooperativeness in DC-LDC relationships that reduces the threat of cartels.

**Event 53: Capital resources are not able to meet long-term investment needs of industry.*

PROBABILITY OF EVENT
Scenario

A			B			C			D			R		
1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000
.10	.15	.20	.20	.25	.30	.20	.25	.30	.40	.50	.85	.20	.30	.40

The probability of this event in Scenario A is low due to the low growth rate creating a rather low demand for investment funds. In Scenario D there is a serious malfunction in the capital markets due to inflation and fragmented Federal Government policies resulting in a high probability. The probabilities in Scenarios B, C, and R essentially represent a mid-ground between Scenarios A and D.

Event 54: The DOD budget increases to at least 50 percent of the Federal budget (about 27 percent in 1975).

PROBABILITY OF EVENT
Scenario

A			B			C			D			R		
1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000
.05	.05	.10	.10	.25	.40	.10	.20	.30	.10	.30	.40	.10	.15	.20

Generally low probabilities are assigned to this event in all scenarios since no major wars are foreseen in any scenario. In Scenario B there is a chance of the event occurring by the year 2000 as the result of the country's perceived need to increase its defense in order to secure its dominant position in the world.

In Scenario D economic difficulties at home lead to tests of U.S. vulnerability by other nations. Furthermore, the increase in military spending may be used to offset the high rates of unemployment in the scenario.

The probabilities in Scenarios C and R are lower because the United States pursues a cooperative policy with regard to lesser developed countries and has good relations with the other major powers in the world.

The probability for the event is the lowest in Scenario A where the United States plays a passive role in foreign affairs.

**Event 55: Wage, price, profit, and interest rate controls are permanently established.*

PROBABILITY OF EVENT

Scenario														
A			B			C			D			R		
1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000
.30	.80	.95	.05	.10	.10	.05	.15	.20	.15	.20	.25	.20	.45	.60

This event occurs in Scenario A since it is part of the conscious limited growth policy adopted by the Federal Government.

In Scenarios B and C the event has low probabilities because there is no reason to impose these controls with the economy functioning well.

The likelihood of occurrence is low in Scenario D because the political-economic consensus necessary to legislate these controls is not achieved.

In Scenario R this event has a moderate-to-high probability since controls could be imposed to facilitate government planning efforts.

**Event 56: One half of consumer durables are fabricated using recycled materials.*

PROBABILITY OF EVENT

Scenario														
A			B			C			D			R		
1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000
0	.40	.60	0	.20	.30	0	.50	.60	0	.30	.40	0	.70	.90

The 1980 probabilities for all the scenarios is equal to zero for this event because this level of recycling effort would be impossible to achieve in just a few years. The event is highly likely in Scenario R where the recycling effort can be expected to constitute an important part of the effort to allocate resources in the most effective manner. The event is considered likely, though less so, in Scenarios A and C by the year 2000. In Scenario A the event would be part of the overall attempt to decelerate growth through the conservation efforts associated with recycling. The event is considered likely in Scenario C where there is also a strong conservation effort. The probability in Scenario C, however, is less than in Scenario R because developing technology will provide alternative resources and alternative materials, making recycling somewhat less necessary.

Material needs in Scenario D would make such a program of recycling attractive, but government inability to implement such a program keeps the probability at only 40 percent by the year 2000.

Expanding technology and relative lack of constraint on raw material sources make the event relatively unlikely in Scenario B by the year 2000. The assigned 30 percent probability, however, does suggest that recycling as a cost-effective source of materials would not be unattractive even in this affluent scenario.

Event 57: Ten billion dollars per year of government funds are devoted to urban transit system development (approximately \$2 billion in 1974).

PROBABILITY OF EVENT

Scenario														
A			B			C			D			R		
1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000
0	.60	.75	0	.30	.40	0	.35	.50	0	.25	.30	0	.50	.60

The event is likely in Scenario A, where there is a strong emphasis on urbanization and the need to develop suitable mass transit as an alternative to private vehicles.

The probabilities in Scenario R are somewhat less than in Scenario A because, while urban transit will also be emphasized, government funds will have to compete for priorities in planning for the most efficient use of all resources.

The event is given an even chance of occurring in Scenario C where, though levels of affluence and technological development will sustain the use of non-polluting private vehicles, there is a continuing increase in urban concentration that may require increases in mass transit.

The private vehicle in Scenario B remains the prime mode of transportation, and such accelerated development of mass transit is considered unlikely.

The event is considered least likely in Scenario D, where poor economic conditions allow the government only limited spending on urban transportation.

**Event 59: A publicly-owned petroleum company is established that supplies 20 percent of the domestic market.*

PROBABILITY OF EVENT.

Scenario														
A			B			C			D			R		
1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000
.05	.20	.30	0	.05	.10	0	.15	.25	.15	.50	.60	.05	.45	.55

A publicly-owned petroleum company would be formed principally to assure an adequate flow of funds for domestic oil exploitation. The event has zero probability in 1980 for Scenarios B and C. The probabilities remain low in both scenarios, where there would be very little need for such a company since in both scenarios there is an adequate flow of capital for the development of all energy resources, including petroleum.

The 25 percent probability in the year 2000 for Scenario C indicates that the event is more consistent with the centralized planning government of Scenario C than it is with the laissez-faire government of Scenario B, where the probability in the year 2000 is only 10 percent.

The event is somewhat more likely in Scenario A because the event is consistent with the policy of the government to control resource development. However, the limited growth policy checks the growth of demand and keeps the probability of this event relatively low.

In Scenario R the event has a just-better-than-even chance by the year 2000; policies governing resource allocation make the event consistent with the needs of the scenario.

The probabilities for this are highest in Scenario D. In the economic stress found in this scenario the entrance of the government into the petroleum market through the establishment of a publicly-owned petroleum company might be used to provide stability in the domestic market and to achieve at

least minimum investment in domestic resource exploration and exploitation. The probability for Scenario D in the year 2000 is limited to only 60 percent because the ineffective government associated with the scenario would find it difficult to organize such a successful company.

**Event 63: R&D spending in the United States increases from the 1974 level of 2.5 percent to 5 percent of GNP.*

PROBABILITY OF EVENT

Scenario														
A			B			C			D			R		
1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000
.10	.20	.30	.20	.60	.70	.20	.70	.80	0	.10	.10	.15	.40	.50

The event is likely in both Scenarios B and C by the year 2000. In both of these scenarios there is a high emphasis on technological development, and this will spur intense spending on research and development programs. Centralized planning associated with Scenario C will add stimulus to R&D development, and therefore the probabilities in Scenario C are somewhat higher than the probabilities in Scenario B.

Technological development is not as great in Scenario R as in Scenarios B and C because policies of resource allocation are used to provide solutions to resource problems. Nonetheless, technology is an important adjunct to resource planning in Scenario R.

The probabilities of Scenario R are greater than those in Scenario A, where solutions to resource problems are sought principally by attenuating demand.

The event is considered highly unlikely in Scenario D because the economy of this scenario will not support such a level of R&D expenditures.

**Event 65: The transportation, communication, and energy industries become either public or quasi-public enterprises.*

PROBABILITY OF EVENT

Scenario														
A			B			C			D			R		
1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000
0	.05	.10	0	0	0	0	0	.05	0	.15	.30	0	.10	.20

Such a major institutional change as the nationalization of fundamental industry is considered impossible in the period to 1980 in any scenario. Economic conditions in Scenario D might make the government consider taking over certain industries to keep them from failing. However, the probability even in the year 2000 was considered low because of the historic American prejudices against such socialistic behavior.

The event was given a low probability by the year 2000 in Scenario R, where the government could consider it desirable to control fundamental industry to aid the allocative procedures.

The event is consistent with the government of Scenario A, but policies of limited growth are carefully formulated to avoid causing dislocation of fundamental industry.

**Event 67: The prices of all prime energy sources are totally deregulated.*

PROBABILITY OF EVENT

Scenario														
A			B			C			D			R		
1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000
.05	.10	.15	.20	.50	.70	.15	.40	.50	.05	.10	.20	.05	.10	.20

Laissez-faire policies in Scenario B make this event likely by the year 2000.

Successful resolution of energy problems make the event possible in Scenario C. The probability, however, is smaller in Scenario C because the government in this scenario maintains a regulatory posture as a policy of centrally-directed planning.

The probability of the event occurring is low in Scenario R, where programs of resource allocation are aided by regulatory control of prices.

The probability in Scenario D is small because deregulation would produce escalation in the cost of energy in an environment already beset with economic difficulties.

The probabilities are lowest in Scenario A, where regulatory control of prices would be used to implement limited growth policies.

**Event 75: A national program of socialized medicine is established.*

PROBABILITY OF EVENT

Scenario														
A			B			C			D			R		
1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000
0	.25	.45	0	.05	.10	0	.15	.20	0	.25	.40	0	.40	.60

Socialized medicine is too radical an institutional change to occur within any scenario by 1980. By the year 2000 the event is likely in Scenario R because socialized medicine is consistent with the allocation policies to extend the delivery of health services.

A possible need was seen in Scenario A to provide equitable distribution of health services in the slow-growth economy, and the event has a nearly even chance by the year 2000.

The need for socialized medicine would also be perceived in Scenario D, but the resources of the government would be limited in trying to provide a subsidized health service.

The event is unlikely in Scenarios C and B because the affluence achieved in the scenarios would make the program of subsidized medicine unnecessary.

The lowest probabilities have been assigned to Scenario B because the event is inconsistent with the laissez-faire policy of this scenario.

**Event 76: A land-use bill that required states to develop Federally-approved zoning plans is passed.*

PROBABILITY OF EVENT

Scenario														
A			B			C			D			R		
1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000
.20	.50	.65	.10	.15	.20	.30	.50	.75	.10	.20	.30	.30	.70	.90

Programs for land use will be part of the resource allocation of policies implemented in Scenario R. The event is highly likely to occur by the year 2000 in Scenario R.

Central planning policies in Scenario C will also affect land use. The event has a lower probability because technological solutions may be found to the environmental impacts of land use that would otherwise have to be handled by zoning.

While the land-use bill is consistent with governmental philosophy in Scenario A, the achievement of limited growth policies can be expected to relieve some of the stress on land usage.

The event is given a low probability in Scenario D because the scenario is particularly deficient in effective governmental planning.

The event is given its lowest probability in Scenario B because it is inconsistent with the laissez-faire policies of the government in that scenario.

Event 77: Congress enacts a new tax on goods and services proportional to their environmental impact, allocating these funds for environmental improvements.

PROBABILITY OF EVENT

Scenario														
A			B			C			D			R		
1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000
.30	.40	.60	.05	.10	.15	.20	.30	.40	.10	.15	.20	.35	.50	.70

The event is likely in Scenario R because policies will be adopted to apportion the social costs of all production.

Such a tax would be used in Scenario A to restrain industrial growth. The event, however, has a lower probability than in Scenario R because the lower demand in Scenario A tends to relieve environmental impacts.

The event is unlikely in Scenario C, in part because technological advances minimize environmental assaults in the economic production of goods, and in part because sufficient funds can be raised from the general tax structure without the specific enactment of such a bill.

In Scenario D the event is very unlikely because such a tax would impact severely on an already disabled economy.

The event is improbable in Scenario B, where such a tax would be contrary to the existing philosophy of laissez-faire government.

**Event 78: Federal funds for community development to revitalize cities increase threefold over the 1975 level (community development funds totaled \$3.2 billion in 1975).*

PROBABILITY OF EVENT

A			B			C			D			R		
1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000
.20	.50	.70	.10	.20	.30	.10	.40	.55	.15	.25	.35	.30	.50	.80

In both Scenarios R and A there is a high emphasis on the increased efficiency of delivery of services brought about through increasing urbanization. The event is therefore given the highest probability in these scenarios, though in Scenario A a slower population growth may ease pressures on the urban environment.

Urbanization in Scenario C is supported in large part through the flow of private capital into the developing urban structure, thereby minimizing the need for Federal funding, for this reason the event has a lower probability than in Scenarios A or R.

The event has a low probability in Scenario D because economic stress in that scenario prohibits the level of expenditure.

The event has the lowest probability in Scenario B because of moves toward decentralization and the continuation of suburban development.

Event 82: A progressive tax is imposed on all energy usage with the proceeds funneled into energy production and conservation R&D programs.

PROBABILITY OF EVENT

Scenario														
A			B			C			D			R		
1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000
.30	.60	.70	.05	.10	.15	.15	.40	.60	.10	.15	.20	.30	.70	.80

The event is likely in Scenario R because of the emphasis on the fair distribution of the social costs of energy production, and the event would tend to penalize high energy users.

In Scenario A such a tax may be used as a specific measure to slow energy growth, though the decrease in demand makes its probability less than in Scenario R.

Environmental considerations and conservation are strong factors in Scenario C; but because of adequate energy planning and technological progress, the probability for this event is somewhat less than in Scenarios A or R.

Such a tax is unlikely in Scenario D because it would raise the already high cost of energy.

The event is improbable in Scenario B, where it would be seen as an unwarranted intrusion into the free marketplace.

**Event 84: Federal Government assumes full responsibility for all all public aid payments.*

PROBABILITY OF EVENT

Scenario														
A			B			C			D			R		
1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000
.30	.60	.70	0	.05	.05	.05	.15	.25	.30	.40	.50	.30	.80	.90

The event has a high probability of occurring as early as 1990 in Scenario R because the occurrence of the event is seen as a part of the allocative function of the Federal Government.

In Scenario A the Federal Government may take over the public aid payments in order to correct dislocations that may be caused by the limited growth policy. While the event is likely in Scenario A, it is less so than in Scenario R, where it is integral to the philosophy of government.

The event has only an even chance by 2000 in Scenario D because of the limited ability of the government to support such a program.

The affluence of Scenario C makes the occurrence of the event unlikely. The event, however, is consistent with the philosophy of the central government in Scenario C, and a low probability is given for the year 2000.

The event was seen as inconsistent with the governmental policies of Scenario B and, therefore, virtually impossible.

Event 89: Federal funds are withheld in order to stop urban expressway construction.

PROBABILITY OF EVENT

Scenario														
A			B			C			D			R		
1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000
.20	.50	.70	0	0	.05	.10	.30	.40	.10	.20	.30	.15	.50	.70

This event is likely in Scenarios A and R, in which urban automobile transportation is considered to be resource inefficient.

The event has low probability in Scenario C because the level of affluence in the scenario can support both private and public transportation systems.

The event is unlikely in Scenario D because sufficient urban transit will not be developed to take up the increase in the demand that this event would imply.

In Scenario B suburban life continues to be very strong and the need for highways grows, making the event highly improbable.

Event 93: The Federal Government attempts to restrict the size of the labor force by adopting policies to encourage early retirement of higher levels of public education.

PROBABILITY OF EVENT

Scenario														
A			B			C			D			R		
1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000
.10	.50	.60	0	0	.05	.05	.10	.10	.10	.50	.60	.10	.40	.50

The event is likely in Scenario A, where policies of restricted growth may make it necessary to apportion job opportunities.

This event is also likely in Scenario D, where such an attempt may be used as a means of apportioning jobs under conditions of high employment.

In Scenario R the event has an even chance of occurring as a possible way of offsetting the impact on unemployment caused by resource allocation policies.

The event is considered improbable in Scenarios C and B, where high levels of affluence exist, and unemployment is at a minimum.

Event 94: Twenty-five percent of the work force does not work the standard five-day, forty-hour week.

PROBABILITY OF EVENT

Scenario														
A			B			C			D			R		
1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000
.20	.60	.80	.20	.50	.60	.20	.70	.80	.20	.60	.70	.20	.30	.40

The event is likely in Scenario C as a benefit associated with high levels of personal affluence. The event is somewhat less likely in Scenario B because of lower levels of per capita affluence as population remains high.

The probability of the event will be likely in Scenario A, where the reduced workweek might become a policy in limiting economic growth.

In Scenario R as historical growth rates are approximated there is little reason to disrupt a work pattern that is achieving satisfactory results. Thus, the event has the lowest probability in this scenario.

In Scenario D the event is likely as an instrument of governmental policy attempting to spread available opportunities for labor.

Event 95: Half of all U.S. employees have 30 days of work vacation and 15 scheduled holidays.

PROBABILITY OF EVENT

Scenario

A			B			C			D			R		
1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000
0	.40	.60	0	.40	.60	0	.70	.90	0	.10	.15	0	.30	.40

The institutional changes required for this event are too large to make an event possible in any of the scenarios by 1980. It is likely in Scenario C as a benefit associated with high levels of personal affluence.

The event is likely in Scenario A because of the reduced need for labor inputs into the limited growth economy. In this scenario longer vacations may be promoted by the government as a benefit accompanying limited growth.

In Scenario B levels of per capita affluence are somewhat lower and the event therefore was assigned a lower probability.

The moderate levels of affluence in Scenario R keep this event from being likely before the end of the century.

The event is very unlikely in Scenario D, where competition for jobs will prevent such benefits from being offered.

**Event 96: Fifty percent of assembly-line production is controlled by computers.*

PROBABILITY OF EVENT

Scenario A			Scenario B			Scenario C			Scenario D			Scenario R		
1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000
0	.15	.20	0	.40	.50	0	.50	.70	0	.10	.10	0	.20	.30

Because of the advanced state of technology and the high emphasis on automation in Scenario C, the event will be likely by the year 2000. There is not the same emphasis on automation in Scenario B, and though technology reaches a high level in this scenario, the event has only an even chance by the year 2000.

The event is unlikely in Scenario R, where no radical changes can be expected in the direction of energy-intensive production.

It is unlikely in Scenario A, where decelerated economic growth may make it necessary to seek increasing opportunities for employment.

The event is highly unlikely in Scenario D because of high unemployment levels and general stagnation in the economy.

**Event 97: Middle class attitudes toward work are challenged by the rise in avocational interests, resulting in decreased demands for career advancement opportunities.*

PROBABILITY OF EVENT

Scenario A			Scenario B			Scenario C			Scenario D			Scenario R		
1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000
.10	.60	.80	.05	.10	.20	.05	.30	.40	.05	.10	.15	.10	.40	.50

The shift in values represented by this event will have to take place over a period of at least a decade. By the year 2000 the event is likely in Scenario A because policies limiting growth may limit career opportunities

and cause people to look to avocational interests for self-expression.

In both Scenarios R and C the social level of consciousness is raised, and there is interest in all phases of societal problems, particularly in Scenario R with its emphasis on a "fair" allocation of societal benefits. Career opportunities still tend to be the central focus in these two scenarios, however, and the event has only an even chance in Scenario R by the year 2000.

The event was considered unlikely in Scenario B, where the emphasis on free enterprise tends to promote career-oriented values.

In Scenario D economic necessities can be expected to maintain conventional attitudes toward work.

**Event 100: Coal production fails to reach currently projected levels because of labor problems, inadequate transportation, and environmental constraints.*

PROBABILITY OF EVENT

Scenario														
A			B			C			D			R		
1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000
.10	.50	.50	.05	.05	.05	.10	.15	.15	.50	.75	.90	.10	.30	.40

Production failures due to economic problems and inadequate transportation are part of Scenario D, and the event is likely as early as the 1980's.

The limited growth policy put into effect in Scenario A can be expected to provide certain stresses and disharmonies leading to production difficulties. Such transients would be high in the period around 1990, after which time the economy should have adjusted to the slower growth pattern.

The event is less likely in Scenario R than in Scenario A because government policies in Scenario R may be expected to actively intervene in problem areas concerning resources.

In Scenarios B and C high levels of affluence and special emphasis on energy supplies can be expected to provide a fair return to labor, while technological solutions have been found to problems of transportation and environmental constraint.

**Event 111: Automated individual instruction is introduced at all educational levels.*

PROBABILITY OF EVENT

Scenario														
A			B			C			D			R		
1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000
0	.40	.50	0	.50	.60	0	.50	.70	0	.10	.10	0	.30	.50

Emphasis on high levels of individual attainment make the event likely in Scenario C. The major role of the Federal Government and the levels of affluence found in this scenario will result in the necessary subsidization leading to the increasing use of automation in education.

In Scenario B the tendency towards decentralized community control is expected to make the occurrence of this event somewhat less likely than in Scenario C.

The event is given an even chance in Scenarios A and R by the year 2000. In neither of these scenarios do technological developments reach the levels of Scenarios B and C, and, it may therefore be inferred that the demand for the kind of educational efficiency that would accompany automated instruction would not be required in either of these scenarios.

The event is highly unlikely in Scenario D, where economic and social conditions prevent such educational experimentation.

Event 123: Conservation efforts, using developed technologies, (to achieve increases in thermal efficiencies, reductions in heat losses, the productive use of waste heat, etc.) reduce petroleum consumption by 20 percent from previously expected levels.

PROBABILITY OF EVENT

Scenario														
A			B			C			D			R		
1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000
0	.50	.70	0	.30	.40	0	.60	.80	0	.10	.20	0	.80	.95

Implementation of such successful conservation policies is not considered possible in the time frame to 1980. The event has the highest probabilities in the three scenarios which emphasize conservation efforts, A, C, and R.

The event is not probable in Scenario B in which there is a relatively unconstrained use of resources.

In Scenario D the event is unlikely because ineffective government policies would make successful implementation very difficult.

Event 124: Increased exploration and drilling activities double the rate of discovery of onshore and offshore petroleum reserves.

PROBABILITY OF EVENT

Scenario														
A			B			C			D			R		
1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000
0	.30	.40	.20	.80	.90	.20	.70	.80	0	.10	.10	0	.40	.60

The event is very likely in Scenarios B and C where there will be a demand for all energy products, including oil.

The event is likely in Scenario R because of its emphasis on development of domestic resources, but has a lower probability than in either Scenarios B or C because of a lower demand for energy.

Attenuated demand due to limited growth makes the event unlikely in Scenario A.

The event is improbable in Scenario D because of the difficulty in raising capital necessary to provide for such an expansion.

**Event 151: Corporate income tax rate is reduced by 50 percent from 1975 levels.*

PROBABILITY OF EVENT

Scenario														
A			B			C			D			R		
1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000
0	0	0	.30	.85	.95	.20	.30	.40	.10	.15	.20	.10	.20	.30

This event has no possibility of occurrence in Scenario A because it is in complete opposition to the low-growth philosophy adopted.

Since Scenario B is characterized by a "hands-off," laissez-faire stance by the Federal Government, this event has the highest probability as the government does all it can to aid private-industry growth.

In Scenario C the initiative in spurring economic growth is taken by government, and the event has only a low-to-moderate likelihood of occurrence.

In Scenario D, although there is a capital shortage, the lack of significant ameliorative policies by the Federal Government makes the occurrence of this event unlikely.

In Scenario R this event has a somewhat low probability because it seems to conflict with the degree of Federal control.

**Event 152: Federal reserve adopts constant growth policy as regards the monetary aggregates (i.e., M_1 grows at 6 percent) and thus dispenses with monetary policy as a discretionary tool, and the Federal budget is balanced.*

PROBABILITY OF EVENT

Scenario														
A			B			C			D			R		
1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000
0	0	0	.20	.70	.80	.10	.20	.30	0	0	0	.05	.10	.15

Since this event does describe a marked policy shift by the Federal Government, all 1980 probabilities in each scenario are zero or quite small.

In Scenario B this event typifies the government laissez-faire stance and the probability is high.

In all other scenarios the likelihood of occurrence is low due to the spectacular policy shift implied.

Event 153: Costs for electric system equipment accelerate at 10 percent above the general inflation rate.

PROBABILITY OF EVENT

Scenario														
A			B			C			D			R		
1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000
.10	.20	.25	.20	.60	.70	.20	.30	.40	.10	.70	.80	.10	.15	.15

The event is likely to happen in Scenario D where economic conditions make capital availability for the utilities a problem, and costs for utility specialized equipment will be seriously affected.

The probability of the occurrence of this event is likely in Scenario B because the unconstrained rate of growth in this scenario will result in high long-term demands for utility equipment.

Probabilities are lower in Scenario C, where the intervention of government tends to keep all sectors of the economy in balance.

Slower rates of expansion minimize the impact on utility economics in Scenarios A and R, and the allocation process in Scenario R further reduces the likelihood of the event.

Event 154: The cost of fossil energy rises to \$20 per barrel in real terms.

PROBABILITY OF EVENT

Scenario														
A			B			C			D			R		
1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000
0	.30	.40	.10	.15	.20	0	.10	.10	0	.65	.90	0	.10	.20

The event is highly likely in Scenario D because technical limitations restrain development of more economical domestic sources of energy, and foreign imports continue to escalate in cost.

The event is unlikely in all other scenarios because of the possibility of exerting leverage on energy costs by the development of adequate technology as in Scenarios B, C, and R, or by modulating demand as in limited-growth Scenario A.

Event 155: Pollution abatement requirements are allowed to be dependent on industrial and economic growth.

PROBABILITY OF EVENT

Scenario														
A			B			C			D			R		
1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000
.20	.50	.70	.05	.10	.10	.05	.10	.15	.20	.70	.95	.10	.20	.20

The event is very likely in Scenario D where environmental constraints have not been resolved successfully by technological developments, and a general relaxing of environmental requirements will be attempted to aid the economy.

Such across-the-board relaxation of environmental constraints is likely in Scenario A in order to lessen economic disequilibrium that may accompany the restrictions on economic growth. As acceptable pollution levels are reached in Scenario A due to the overall decline in industrial output, the need to maintain economically burdensome environmental costs will be eased.

Successful allocation policies will reduce the need for relaxation of environmental factors in Scenario R.

The event is unlikely in Scenarios B and C, where pollution costs are easily borne by the society.

*Event 171: OPEC dissolves.

PROBABILITY OF EVENT

Scenario														
A			B			C			D			R		
1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000
.05	.15	.20	.20	.50	.80	.20	.65	.90	.05	.05	.05	.05	.30	.60

In Scenario A, dissolution of OPEC is unlikely. Dissolution and the likely price consequences of that dissolution are inconsistent with the low growth rates demonstrated in the scenario. However, it is possible that as the low growth rates and the resulting decline in demand place pressure on OPEC to cut production in order to maintain prices, pressure from certain OPEC members for increased production and price cutting will increase, giving the event a small chance of occurring.

Scenario B stipulates that there is an increase in technological activity within the United States, with special reference to energy extraction and refining. The potential for expanding domestic supplies is likely to increase

pressure on OPEC to increase production and cut prices in order to maintain markets, with the result being very severe strains on the cohesion of the cartel. These trends are cumulative as the period proceeds.

The resemblance of Scenario C to the previous scenario is very close insofar as the probability of this event is concerned. What distinguishes this scenario is a greater understanding and sensitivity among developed countries towards the aspirations of less-developed countries that is apt to decrease the contentiousness in U.S./less-developed country relationships, including the OPEC members.

In Scenario D, the low level of growth is partially the result of the failure of energy policies to provide any leverage against foreign oil prices. The growth levels are unlikely to stimulate the technological response necessary to place increased pressure on OPEC. With the scenario, in fact, the technological solutions are not available. This has the result of maintaining the solidarity of the OPEC cartel.

In Scenario R government policies deal successfully with domestic resource management. There is sufficient technological growth to expand domestic energy resources, and the result is growing divisive pressures on OPEC.

**Event 172: European Community and Japan erect prohibitive trade and investment restrictions which effectively deny market access to the United States.*

PROBABILITY OF EVENT

Scenario														
A			E			C			D			R		
1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000
.10	.20	.30	.05	.05	.10	.10	.10	.15	.30	.80	.85	.20	.20	.20

In Scenario A the U.S. influence over European events dissipates as the United States becomes preoccupied with its own domestic problems. This lack of influence leads to some erosion of international trade law. However, U.S./E.C. diplomatic and economic relations do not deteriorate to the point that such a catastrophic event is probable.

In Scenario B the United States completely dominates Europe and Japan, both strategically and economically. This political dominance, which is translated into predominant influence over trade and financial arrangements, is supported by the self-interest of Europe and Japan, who see the United States as a vital market for their exports. Therefore, they would not jeopardize that market by erecting trade barriers against U.S. exports that would invite U.S. retaliation.

In Scenario C the United States also exerts a dominant influence over trade and monetary arrangements among the developed countries. This is a reflection of its economic power as well as its diplomatic and strategic influence throughout the world.

The probabilities of this event in Scenario D are quite high. The United States is impotent on the European continent and in Japan. Its diplomatic and strategic credibility has eroded. As its economy has stagnated, so has the economic leverage it exercises over monetary and trade relationships with its primary allies. This erosion of influence, combined with the

generally low level of economic growth and the protectionist pressures that this engenders, creates the necessary conditions for trade wars among the United States and both the European community and Japan. This contentiousness is unrelieved by any increased growth toward the end of the period.

The initial period of Scenario R is characterized by interest-group pressures in all developed societies for protectionist measures, domestic political uncertainty, and a general lack of coordination in international economic policy among the major developed countries. These conditions are not sufficiently compelling, however, to force a complete reversion to protectionism. The increased levels of economic growth, associated with more direct governmental roles in various economies that occurs around 1985, results in a reassertion of U.S. influence in Europe and Japan and a reaffirmation of cooperative efforts in the trade and monetary fields.

**Event 174: United States and other developed countries negotiate multilateral agreements with LDC's, assuring access to raw material supplies for consumer nations and stable export earnings for producing nations.*

PROBABILITY OF EVENT

Scenario

A			B			C			D			R		
1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000
.15	.15	.20	.05	.05	.05	.55	.65	.75	0	0	0	.20	.50	.70

In Scenario A there is very little cohesion among developed countries, which would seem to preclude the possibility of a common developed country policy in the area of raw materials toward the LDC's. In addition, the United States has become more insular and less willing to enter into global agreements with less-developed countries to help stabilize LDC export earnings.

In Scenario B there is very little reason for the United States and other developed countries to enter into agreements with the LDC's in the area of raw materials, since many of these raw materials are now available to developed countries through new technologies for resource extraction. Furthermore, the scenario entails very little sensitivity on the part of developed countries toward the economic requirements of LDC's.

Again, in Scenario C there is little economic incentive on the part of the United States to come to agreement with less developed countries on export prices. However, despite the availability of raw materials domestically, there is in this case a greater awareness on the part of the United States and other developed countries (which, in fact, the United States largely dominates in this scenario) of the problems of LDC economic growth, as well as the instability that lagging LDC growth is apt to create in the international economic system. Therefore, there is a greater willingness here to enter into agreements which will assist less developed countries in expanding their export earnings.

Scenario D is characterized by dissention among developed countries that precludes a common policy toward LDC's. Furthermore, active domestic interest group involvement in foreign policy militates against agreements that provide less-developed countries with preferred and guaranteed export earnings.

Up to the beginning 1980's in Scenario R the developed countries are both disunited and unable to muster the kind of leverage with LDC's that would permit agreements on stabilizing export earnings and assuring access to raw materials. The LDC's that are successful in forming cartels have little incentive to enter into agreements guaranteeing developed countries

access to the raw materials, nor do they have the incentive for committing themselves on future export prices. However, by 1990 LDC resource leverage declines, and the interest of LDC's to enter into such agreements increases.

Event 181: An indexing system for all wages, prices, interest rates, and profits is established.

PROBABILITY OF EVENT

Scenario														
A			B			C			D			R		
1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000
0	0	0	0	.05	.10	.10	.30	.40	.10	.30	.80	.05	.10	.25

This event is probable when there has been a significant lack of success in coping with inflation. It is likely in a scenario where wage-price controls are not feasible due to legislative inaction or simply because of an inability to deal directly with the inflation problem.

Following this reasoning, by the end of the century, the high inflation of Scenario D makes the event likely.

In Scenario A the event has no chance of occurrence; in fact, since wage-price controls are implemented in A this event does not happen. In Scenario B the laissez-faire attitude (plus no serious inflation) precludes a high or even moderate probability.

In Scenario C there is a moderate chance of occurrence by the end of the century due to a significant governmental presence in a rapidly growing economy. The event has a low probability in the well-planned, moderately growing economy of Scenario R.

Event 182: Accelerated depreciation allowances are approved and become law (20 percent increase over 1975 levels).

PROBABILITY OF EVENT
Scenario

A			B			C			D			R		
1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000
0	.05	.10	.50	.60	.80	.40	.50	.60	.30	.40	.50	.10	.20	.30

This event is likely to occur where government policy is to aid private industry in obtaining needed funds for investment. The event will be likely in a high-growth economy.

In Scenario B, where there is very rapid growth and a conscious decision by central government to aid private capital formation, this event has a high likelihood of occurrence.

The event has a moderate-to-high probability in Scenario C since there is rapid growth. However, the fact that government is the prime mover in Scenario C makes the event somewhat less likely than in B.

In Scenario D, where there is a definite problem in capital formation, the event has a moderate chance of occurrence, though the fact that government policy is chaotic and unproductive, holds down the probability.

The event has a low probability in Scenario R since thorough planning by government is successful in securing adequate capital formation.

In Scenario A the adoption of a limited-growth policy makes this event quite unlikely.

Event 184: Corporate profits distributed as dividends are no longer taxed.

PROBABILITY OF EVENT

Scenario														
A			B			C			D			R		
1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000
0	0	0	.50	.80	.95	.40	.60	.70	.05	.10	.15	.20	.40	.50

The occurrence of this event gives the equity markets and corporations a significant boost since income received by individuals as dividends will be tax free. The event has a very high probability in Scenario B since it probably would be one of the measures instituted to boost investments and since it also typifies the turnover of initiative from the public to private sector.

The probability is high in Scenario C, but not quite as high as in B, because government has much more control in guiding the economy.

The event has a moderate probability in Scenario R since this event could well be a part of plans to bolster the capital market.

In Scenario D the lack of cohesive policies and a state of inertia makes the likelihood of occurrence low.

In Scenario A the conscious adoption of a low-growth policy makes this event extremely unlikely.

Event 185: In order to improve municipal finance conditions, Federally-subsidized municipal securities are established and issued.

PROBABILITY OF EVENT

Scenario														
A			B			C			D			R		
1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000
.50	.60	.70	.20	.25	.40	.50	.60	.70	.10	.20	.30	.40	.50	.60

The likelihood of this event depends greatly on the policies and attitudes of the Federal Government toward municipalities. Since in Scenario A there is a conscious effort to revive and support municipal development, the probability is high.

In Scenario C, as in A, there is a stated policy aim by the Federal Government to aid municipalities, and the event has a relatively high chance of occurrence.

In Scenario R the rather complete planning focus of Federal agencies makes this event likely, though Federal revenues may be more limited.

The somewhat detached governmental posture makes the probability less likely in Scenario B.

In Scenario D the chaotic conditions which affect both Federal and local government result in a low probability.

Event 191: The European Community negotiates a series of preferential trade agreements with OPEC countries embodying preferred EC access to OPEC crude oil at below world prices and OPEC discrimination in favor of EC exports, in exchange for EC technology, technical assistance, and lower tariffs on OPEC manufactured products.

PROBABILITY OF EVENT

Scenario														
A			B			C			D			R		
1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000
.30	.35	.40	.10	.10	.15	.20	.30	.30	.10	.10	.10	.30	.30	.30

This event reflects a growing separateness of U.S.-EC relationships. As such, the probability is the largest in Scenario A, since in this scenario there is a retrenchment in U.S. global aspirations and a growing cohesiveness in Europe based upon an independent foreign policy.

In Scenario B the U.S. dominates trade and financial arrangements among all the developed countries. This hegemony virtually eliminates the possibility of a united Europe agreeing to special trade arrangements with OPEC.

In Scenario C the United States is predominant but is philosophically less averse to special trade arrangements which interfere with free-market forces. In this scenario, were the United States to perceive advantages for Europe in forming special trade relationships with OPEC, its opposition would likely be much less harsh and effective than in the case of Scenario B.

The disunity among the various European states in Scenario D is such that any common European policy toward any external power is very unlikely. Therefore, the probabilities are virtually nil throughout the period.

In scenario R there is a certain degree of devolution in U.S. commitments to Europe and a movement toward a common European foreign policy. At the same time, relationships between Europe and the United States remain congenial. The event, therefore, has a low probability up to 1980, but becomes less probable as U.S.-European relationships stabilize.

Event 197: Development of North Sea oil and natural gas and further growth in nuclear power in France, the United Kingdom, Italy, and West Germany enable Europe to supply 65 percent of its energy needs.

PROBABILITY OF EVENT

Scenario

A			B			C			D			R		
1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000
0	.25	.35	0	.30	.45	0	.45	.65	0	.10	.15	0	.45	.75

The 65 percent satisfaction of energy needs in this event represents the goal established by the European Community. It is highly unlikely in any case by 1980. In Scenario A the limited growth which prevails in both the United States and the European Community retards energy and gives a small chance that further development of North Sea oil and nuclear power in Europe might satisfy 65 percent of demand.

In Scenario B, while technological progress improves extractive industry efficiencies, the growth in demand is too large for the events to have a large chance of occurring.

In Scenario C the effectiveness of government in promoting increased self-sufficiency through exploration of North Sea oil and natural gas and development of the nuclear industry is far greater than in either of the prior scenarios. Since this European program is financed by government R&D funds, the greater involvement of government which is an assumption of this scenario contributes to considerably higher probabilities for this event than in Scenario B.

The effectiveness of governments in Scenario D is severely curtailed, as is the technological and financial strength of the European energy industry. Furthermore, there is considerable dissention within the European Community, which further contributes to a paralysis of common European programs.

In Scenario R there is both an effective government role in promoting energy self-sufficiency and a conscious effort to limit energy consumption and demand in order to match resources with requirements. There is also consensus postulated among the European countries on promoting this degree of self-sufficiency. Therefore, probabilities of this event are highest in this scenario.

Event 206: Escalating guerrilla warfare and a radicalization of Latin American governments leads to expropriation of foreign assets and renunciation of debts to developed countries

PROBABILITY OF EVENT

Scenario														
A			B			C			D			R		
1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000
.20	.35	.55	.10	.25	.50	.05	.05	.05	.25	.55	.80	.10	.15	.20

In Scenario A the possibility of increased guerrilla warfare and the radicalization of Latin American politics is increased by virtue of the developing insularity of the United States and the accompanying decline in U.S. demand for imports. This tends to give impetus to the growth and influence of Latin American "leftist" movements.

In Scenario B there is considerable U.S. influence over Latin American politics, but that influence is not exerted in such a way as to promote Latin American-U.S. understanding. Therefore, there is growing resentment among Latin American radical movements at the U.S. influence within Latin American economy, the result of which is increased pressure from radical groups to expropriate U.S. property and renounce debts.

The United States in Scenario C consciously attempts to promote Latin American economic development and an equitable distribution of global wealth

through such programs as price supports for Latin American exports and tariff preferences for Latin American products. Therefore, the source of resentment felt in Scenario B against U.S. interests is considerably less in this scenario, which accounts for the low probabilities.

In Scenario D there is a growing asymmetry in U.S.-Latin American relations, combined with aggressive U.S. assertions of its imperial role, frequently expressed through military intervention or covert warfare. The results of this U.S. approach to Latin America is a growing resentment among the Latin American "left" and increased vulnerability of U.S. economic and financial interests.

In Scenario R there is a conscious reduction of U.S. influence in Latin America, combined with a greater appreciation of the needs of Latin American countries to expand their exports and to maintain stable export prices. The lessened U.S. influence in the area, combined with a greater diplomatic accommodation with the interests of Latin American countries, tends to reduce the opportunities for Latin American radical movements to influence Latin American government policies. Therefore, the probabilities of this event in this scenario are quite low.

Event 207: Mexico and Brazil, with significant offshore oil production, join OPEC.

PROBABILITY OF EVENT

Scenario

A			B			C			D			R		
1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000
.25	.50	.75	.25	.35	.40	.20	.25	.30	.25	.55	.80	.25	.45	.45

In Scenario A OPEC continues to be a prominent part of international economics and politics throughout the period. In addition, the degree to

which the United States is capable of influencing a Mexican or Brazilian decision to join OPEC is reduced considerably from the present international system. Therefore, there are incentives as well as an absence of constraints on Mexico and Brazil regarding any decisions to join OPEC. Thus the probabilities of this event in this scenario are quite high.

In Scenario B OPEC suffers declining influence as new sources of energy come onstream in various developed countries. Therefore, the incentives for Mexican and Brazilian membership in OPEC are considerably less in this scenario than in Scenario A.

In Scenario C OPEC is equally unattractive to Brazil and Mexico as in Scenario B. In addition, U.S. efforts to support LDC aspirations generally reduce the degree of hostility in Latin American-U.S. relations and increase the leverage which the United States exercises over decisions by such countries as Mexico and Brazil. Therefore, the probability of Mexico and Brazil joining OPEC is somewhat less here than in the previous scenario.

The growing conflict in Scenario D among the United States and various Latin American countries, contributes to both economic and diplomatic motivation for Mexican and Brazilian membership in OPEC.

In Scenario R a growing cooperativeness in U.S.-LDC relationships is apt to reduce the desire of Brazil and Mexico to seek membership in OPEC. Therefore, the probabilities of this event in Scenario R are only slightly higher than in Scenario C.

Event 208: Venezuela withdraws from OPEC.

PROBABILITY OF EVENT

Scenario A			Scenario B			Scenario C			Scenario D			Scenario R		
1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000
.05	.10	.15	.10	.20	.35	.15	.40	.90	.05	.05	.05	.10	.25	.45

In Scenario A OPEC continues as a significant force in the international petroleum market, and there will therefore be very little incentive for Venezuela to withdraw from OPEC. Combined with this economic rationale is the growing decline of the United States influence on Latin America.

The probabilities of Venezuelan withdrawal from OPEC are somewhat greater in Scenario B as the development of new energy sources in various developed countries places increased pressure on OPEC. However, Venezuela is apt to feel somewhat compelled to maintain membership in the cartel as a result of the growing hostility in developed country-less developed country relationships throughout the period. A withdrawal under the diplomatic circumstances described in this scenario would severely compromise the position of Venezuela as a leader among less developed countries, and therefore would involve significant diplomatic penalties.

Much the same economic circumstances prevail in Scenario C, specifically the growing energy self-sufficiency among developed countries and growing pressure on the cartel to relinquish monopoly controls over price and production. However, the probability of Venezuela withdrawing from OPEC is considerably greater in this scenario by virtue of the improved relationships between developed and less developed countries. The Venezuelans withdraw from OPEC when the cartel becomes less important and less viable.

In Scenario D there is both a continued OPEC cartel and significantly increased hostility between less developed countries and developed countries,

both of which militate against a Venezuelan withdrawal from OPEC. Therefore, the probabilities of withdrawal are virtually nil in this scenario.

In Scenario R the possibilities of an OPEC dissolution are increased by efforts to conserve energy, restrict demand, and develop new energy sources within various developed countries. There is, however, a generally conciliatory atmosphere in developed country-less developed country relationships, which reduces the penalties to Venezuela were it to decide to withdraw from OPEC, and the probabilities of such a withdrawal are somewhat higher in Scenario R than in Scenario B.

Event 210: Completion of a Treaty of Peace and Friendship with the PRC leads to very large Japanese investments in Taiching oil reserves and annual purchases of more than 60 million tons of crude oil from the PRC.

PROBABILITY OF EVENT

Scenario

A			B			C			D			R		
1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000
0	.75	.95	0	.45	.55	0	.55	.60	0	.65	.85	0	.45	.55

The probability of this event happening by 1980 is zero across the board by virtue of the significant investments required to achieve a flow of PRC oil to Japan of 60 million tons a year. The probabilities of this event transpiring in the latter period of Scenario A are high, because the Japanese and the Chinese are already negotiating on significant Japanese investments. Inducements for the Japanese to invest are quite high in the scenario because of Japan's growing sense of isolation as the United States withdraws from the Far East and the consequent need to improve its diplomatic relationships with regional powers. In addition, the continued dependence on OPEC petroleum provides a further incentive for the exploitation of PRC oil.

The probabilities in Scenario B are relatively high because of the current Japanese-PRC mutual interest in joint exploration of PRC oil reserves. However, the incentives for the Japanese to invest large sums in these reserves are somewhat less in this scenario because of the growing possibility of OPEC dissolving and the resulting availability of lower cost petroleum on world markets.

The probabilities in Scenario C are virtually identical to those in Scenario B. Slightly higher values assigned are functions of the relatively greater U.S. support for Japanese-PRC agreement of this nature than is likely to exist in Scenario B.

The probabilities in Scenario D closely resemble those in Scenario A in that there is both a continued strong OPEC cartel and a U.S. withdrawal from its commitments in the Far East, which provides a diplomatic incentive for the Japanese to come to terms with the PRC.

The probabilities in Scenario R are identical to those in Scenario B, though for somewhat different reasons. In this case there is a U.S. withdrawal from its direct military commitment to Japan as well as some reduction of troop levels in South Korea, and this is likely to stimulate a Japanese search for alternative alliances. However, the possibility of an OPEC dissolution during this period tends to reduce the pressures on Japan to invest large sums in the PRC.

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Event 211: Settlement of the Kuril Islands dispute with the Soviet Union is followed by very large Japanese investments in Siberian raw material development--oil, gas, and lumber primarily--including Japanese construction of a pipeline from Tyumen oil fields with Soviet repayment in crude oil.

PROBABILITY OF EVENT

Scenario														
A			B			C			D			R		
1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000
.35	.65	.85	.20	.35	.45	.35	.45	.50	.30	.55	.75	.25	.35	.45

The probability of a Japanese-Soviet agreement and resulting Japanese investment in Siberian raw material development is quite high in Scenario A, though slightly lower than the probability of Japanese investment in the PRC. In fact, across the board--in all scenarios--the probabilities for this event closely parallel those for the previous event. The slightly lower probabilities for this event are a function of traditional Japanese-Soviet hostility, which is a somewhat greater force in contemporary diplomacy than is the historic hostility between Japan and the PRC. In addition, the Kuril Islands dispute is more intractable as a barrier to Japanese-Soviet economic relationships than are existing hostilities between Japan and the PRC, because the Soviets continue to impose unacceptable demands on the Japanese as a prerequisite for Japanese investments in Soviet raw materials.

Event 213: Japanese completely liberalize trade and investment restrictions on imports of goods and capital.

PROBABILITY OF EVENT

Scenario														
A			B			C			D			R		
1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000
.05	.10	.15	.10	.60	.85	.10	.55	.75	.05	.05	.05	.10	.25	.40

The Japanese currently pursue a relatively restrictive trade policy and maintain a variety of impediments to significant foreign direct investments in Japanese industry. Therefore, the probability of a liberalization occurring in Scenario A in which there is growing distance between U.S. and Japanese interests and increased multi-polarity in world politics is extremely low.

In Scenario B the probability in 1980 is quite low by virtue of the restrictiveness of current Japanese trade investment policies. However, the probabilities of this event occurring in this scenario are extremely high during the latter period as a result of U.S. dominance of global economic arrangements. In effect, the Japanese in this scenario are forced by U.S. and other developed country pressure to completely liberalize their restrictions on incoming trade and investment.

In Scenario C the probabilities closely resemble those in Scenario B. The slightly lower probability for the event occurring in 1990 and 2000 is explained by the relatively greater U.S. tolerance for certain limited restrictions necessary in order to protect certain vulnerable industries in various foreign countries.

In Scenario D there is an abrupt and highly disruptive U.S. withdrawal from its commitments in the Far East, an atmosphere of hostility and recrimination between the United States and Japan, and a basic change in Japanese

diplomatic orientation towards its relationships with other Far Eastern powers. Thus, the possibility of a Japanese liberalization on imports with the West are virtually nil in this scenario.

In Scenario R even though there is a U.S. retrenchment in its commitments and objectives in the Far East, the retrenchment is achieved cooperatively with the Japanese, and therefore is relatively free of contention which might "spill over" into trade and investment relationships. Achievement of a planned withdrawal, combined with growing cooperation among equals, increases the probability of this event by the year 2000, though the likelihood for complete trade freedom will still not be great.

Event 217: Japanese programs to stimulate technological innovation achieve technological parity or superiority in data processing, electric automobiles, and pollution abatement equipment.

PROBABILITY OF EVENT

Scenario														
A			B			C			D			R		
1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000
.05	.35	.45	0	.15	.20	0	.15	.20	.05	.40	.55	.05	.35	.40

Japanese programs to achieve innovations in these areas are heavily funded by government and therefore are relatively invulnerable to significant declines in economic activity. Therefore, the possibility of relative technological parity or superiority is somewhat greater in Scenario A than in most others because of the greater government commitment to such innovations in Japan than in the United States and other developed countries.

In Scenario B the U.S. technological lead in these fields will be maintained through continued high economic activity in the United States and the consequent continued commitment of corporate R&D funds to innovation in these areas.

The likelihood in Scenario C of continued R&D commitments in the United States to innovations in these fields keeps the U.S. technologically superior to Japan.

The probabilities are highest in Scenario D for the same reasons cited for high probabilities in Scenario A. The Japanese programs which achieve innovation are heavily supported by government and therefore more likely to be sustained during periods of low economic growth than is the case with programs existing in other developed countries.

The probabilities of this event occurring in Scenario R are somewhat lower than the probabilities assigned in Scenario A, by virtue of the slightly enhanced economic performance demonstrated in the United States and other developed countries in this scenario.

Event 220: OPEC countries continue to spend large portions of their oil revenues on imports of products and technology.

PROBABILITY OF EVENT

Scenario

A			B			C			D			R		
1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000
.20	.25	.25	.25	.55	.65	.25	.55	.65	.15	.15	.15	.15	.30	.60

In Scenario A the general decline in current levels of economic growth and a consequent stagnation in international trade and investment would tend to reduce the level of OPEC revenues as well as its spending on imports in various developed country markets.

In Scenario B, although the possibility of OPEC dissolving increases somewhat, the period during which OPEC maintains its solidarity is likely to be one of significant OPEC imports of goods and services from developed countries. OPEC revenues are likely to be quite high, and therefore its

demand for various kinds of manufactured products from developed countries is also likely to be significantly higher than is the case in Scenario A.

The same reasoning prevails for Scenario C, and therefore the probabilities are identical to those in Scenario B.

In Scenario D the low level of economic growth should reduce OPEC revenues and significantly depress the level of OPEC imports.

In Scenario R OPEC is likely to continue as an important force in international economics, while growth rates in various developed countries are sufficiently high to maintain significant exports to the oil-producing countries.

Event 224: The IEA and OPEC agree to an indexation plan for linking crude oil prices to general level of inflation in manufactured products.

PROBABILITY OF EVENT

Scenario A			Scenario B			Scenario C			Scenario D			Scenario R		
1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000
.25	.50	.75	.05	.05	.05	.10	.30	.50	.05	.05	.05	.20	.40	.50

In Scenario A there is likely to be a mutuality of interest between producers and consumers during the latter part of the period in linking the price of crude oil to the price of manufactured products. The International Energy Association (IEA) countries are likely to gain greater stability in both oil supply and prices with a continued viable OPEC, while OPEC achieves its traditional demand for greater stability in the price of its imports. In addition, there is a philosophical predisposition on the part of developed countries to enter into these kinds of agreements, in that governments are generally more willing to interfere in free market forces in this scenario.

In Scenario B the philosophic willingness to bring the government into the marketplace which existed in Scenario A is absent. In addition, the level of developed country exports to OPEC is extremely high, and this tends to reduce the incentive for developed countries to artificially limit the prices of their exports to OPEC. Therefore, the mutuality of interest in an indexation plan which existed in Scenario A is absent in Scenario B.

In Scenario C there is also a lack of financial or economic incentives for an agreement on an indexation plan with OPEC. However, a philosophic willingness to engage in such agreements exists in this scenario, as well as the diplomatic incentive on the part of the United States to improve its

relationships with less developed countries. This diplomatic interest, plus the long-sought goal of OPEC in stabilizing the prices of its imports, give the event an even chance of occurring by the end of the century.

In Scenario D, the degree of cooperation necessary among the IEA countries to come to a common understanding of their petroleum requirements and to achieve a common negotiating position with OPEC is virtually nil.

The probabilities in Scenario R are similar to those in Scenario C, since there is frequent government intervention in the marketplace domestically, a desire to stabilize petroleum prices among the various developed countries, and a viable OPEC which is interested in stabilizing the prices of its imports.

Event 225: North Sea, Mexican, and PRC oil enter world markets in large volumes, causing OPEC exports to fall to 25 million barrels per day or less.

PROBABILITY OF EVENT

Scenario														
A			B			C			D			R		
1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000
.10	.20	.40	.05	.10	.15	.10	.20	.25	.10	.40	.60	.10	.40	.75

The probabilities for this event occurring in 1980 are quite low within all scenarios, given the sheer physical problem of raising North Sea, Mexican, and PRC oil in large quantities by that date. However, the development of these petroleum sources is likely to occur regardless of the international economic circumstances in each scenario, since in most cases government programs will provide incentives, minimize risks, or take direct responsibility for bringing these kinds of oil volumes onstream.

In Scenario A, the potential for exploitation of these sources and the relatively low demand for petroleum worldwide, contribute to the possibility of OPEC exports falling.

In Scenario B, while it is quite likely that significant oil production will be forthcoming from these sources, the level of world demand for petroleum is sufficient to maintain high petroleum prices. This will enable OPEC to maintain revenues without reducing its production and exports. In effect, the status quo is perpetuated since increases in world demand compensate for the increased supply from new sources.

The probabilities in Scenario C are slightly higher than in Scenario B because the governments are much more active and effective both in promoting exploitation of energy sources and controlling demand.

In Scenario D the likelihood of new oil production from these specific sources is still relatively high, while the level of world demand for petroleum is significantly lower than in the other scenarios. The combination of increased supply and decreased demand is likely to force OPEC to reduce its production and exports in order to maintain control over global petroleum prices.

In Scenario E increased production from all sources is combined with effective conservation efforts in most developed countries. This combination of circumstances is likely to increase the pressures on OPEC to reduce production and exports in order to maintain high petroleum prices.